The Practical Teacher

A MONTHLY EDUCATIONAL JOURNAL.

Edited by JOSEPH HUGHES.

'*Knowledge is proud that he has learned so much,*
Wisdom is humble that he knows no more.'—COWPER.

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TACT

IN THE BUSINESS OF SCHOOL-KEEPING.

BY RICHARD BALCHIN.

IT is probably true that no examination could be arranged that should be entirely satisfactory to the person examined. Similarly, I suppose there has never yet existed the Inspector whose manner and methods are at all times quite agreeable to those who are inspected. Hence, there always has been, and always will be, a certain amount of grumbling at examinations, examiners, and Inspectors. Nevertheless, it is an absolute fact, which we teachers of long experience know only too well, that there have been appointed as censors and scrutineers of our great work, men who seem to be entirely out of sympathy with us and with our endeavours; who are utterly ignorant of what education really is, and what it is we are aiming at; who are complete strangers to the construction and special characters of a 'child-mind,' not knowing, apparently, that there *is* such an entity; or, if they *do* know, being hopelessly at sea in their dealings with it.

Here is such a one. He has just entered the school. He is a good type of—

'THE VILLAINOUS INSPECTOR, OFTEN A CLERGYMAN, WHO IS NOT A GENTLEMAN, AND WHO SEEMS TO DELIGHT IN MAKING NERVOUS WOMEN WEEP.'

He strides in, passes me, goes straight to my desk, and utters his first words: 'Where is your Log-book?' The book is placed before him. 'Where is your First Standard?' he asked. 'There, sir,' I reply. He goes to the class. I remain for a time at the table and watch, and pray lest I enter into temptation; for I feel sorely tempted to do a rash act. He is a short man; narrow chested, rather over at the knees, yellowish-grey skin, mouth a downward crescent, lack-lustre eyes, hair dark and straight, and a voice of a most disagreeable, unmusical, drawling monotone. Before he made his presence felt, there could be seen upon the faces of the boys a pleasing smile of child-like expectancy, and a considerable amount of bright sunshine played about their eyes and rosy cheeks. The strings of all these instruments were ready to respond in sympathetic vibration whenever the true note should be struck. But the true note was not struck; only a discordant, harsh, rasping sound, to which no reply came; for there was absolutely nothing in any one of these children's souls which could harmonise with it. And now what a change has come over the scene! The smiles of childlike expectancy have gone. The bright sunshine has vanished. The blighting presence of this man has been felt as a thick miasma spreading gloom everywhere, or as a foul London fog, which at once extinguishes all that was bright and pleasing. Cruel! most cruel, to place such a man in such a position.

The standard work is got through. Then the class subjects and the specifics. Finally, the recitation and singing. Gloom and depression everywhere. At last this pestilential infliction clears off, to the intense relief of all.

Now, this Inspector has given no scrap of counsel or advice; no single word of encouragement has been spoken, either to children or to teachers. In his rigid looks of unchaste austerity there can be detected no sign of satisfaction with anything he has heard or seen. In course of time the 'Report' comes to hand. Oh, the pity of it! That such a character should be called upon to 'report' about anything connected with living, breathing beings, with feelings, passions, longings, endeavours! Let him have to do with inert, senseless matter, and in no wise bring his influence in contact with human souls. Here is his 'report': 'There has been, on the whole, fair progress in this school; but only ten boys in the First Standard had the four sums right. The percentage of passes was not so high as I should have expected—only 96. The boys in Standard VII. did not know the names of the bones of the cranium, nor what it contained.'

If a teacher unfortunately finds himself inspected by such a one as I have described, I would advise the rigid adherence to a policy of splendid silence. Look as eloquent as may be, but speak no word. Restrain

BRITISH MUSEUM

yourself until the affliction has run its course. But should he unhappily live another year to torment you, be sure and have a whole group of local managers present. Let them all, with note-books and pencils, follow him about from room to room, from the moment he enters to the time of his departure.

Our next type of Inspector is—

'THE ALMIGHTY PATRONISER, WHO KEEPS HIS DISTANCE.'

This is a much less unsatisfactory character to deal with than our last type. He is generally a man of good education; of considerable culture and attainment; and shows a real sympathy with the great work of elementary education; that is to say, he believes that 'the masses' are fearfully ignorant and boorish, but that education, especially if combined with a religious training, in which he professes to be a great believer, will lift them into a higher life and make them better workmen. He is of good birth. The one I have known was the son of a baronet. From his early boyhood he has been carefully trained in the creed that the Almighty did *not* make of one blood all the nations of the world; but, on the contrary, a favoured minority were created of very blue blood indeed; while the vast majority were of a totally different nature, and came into the world for no other purpose than to be the humble servants and workers for the few. When he was quite a lad his father and mother allowed him to order about and direct servants old enough to be his parents. All this is sufficient to account for his 'stand-off-ness'; for the elementary teacher, 'considering his origin,' is, in our friend's estimation, 'a pretty good sort of fellow in his way, but rather common, you know, and narrow in his ideas,' and one with whom it would not do for him, the son of a baronet, to show any kind of familiarity; hence he keeps his distance. This attitude on his part is maintained chiefly by the adoption of an extremely patronising mode of address; by putting out his chin as far as possible, and looking at you straight down each side of his nose; and by scrupulous attention to the correct pronunciation of each syllable of his words. Such a demeanour as this, though somewhat annoying to the teacher, has not, however, proved incompatible with a fair and just estimate of the school. The manner and general bearing before the boys have always been genial and pleasant; and an honest endeavour made to ascertain from the boys what they know and how they have been taught. The course of conduct to be taken by us, when our schools are being inspected by such a one, is to take things easily, look as pleasant as possible, smother up any spark of personal pride that may appear, ask no questions, and make as few remarks as possible.

THE INSPECTOR WITH 'STRONG POINTS' WHICH IGNORANT PERSONS IRREVERENTLY CALL 'FADS.'

What an extraordinary number of most 'potent agencies' have been adopted from time to time, all having for their ultimate aim the regeneration of the human race! This has been the case in the worlds of Religion, of Politics, and of Morals. And those of us who have for some length of time been labouring in the regions of National Education, know full well that here also the same policy has manifested itself. At one time, that is to say, about forty years ago, the teaching of Social Science was the 'proper thing' to raise the masses. While this 'fit was on' I was pupil teacher, and had to give a lesson upon this subject every day in the week. I attended the classes held in one of the rooms of University College, Gower Street; my teacher was Mr. Shields. Lord Brougham took the chair at the opening lecture. On this occasion an incident occurred, which I think would be interesting to my readers. At the close of his lordship's address, a teacher from among the audience rose and propounded this query:—'May I be permitted to ask the noble chairman, whether by the introduction of this subject of Social Science in our schools it is intended to drive out the Bible and religious teaching?' Brougham rose; from beneath his full prominent hairy brows his two eyes flashed fire like those of the tiger out of the thick jungle. 'God forbid!' startled the place like a thunder-clap, and our questioner collapsed. But the masses were not raised by the teaching of Social Science. Then it was discovered that our instruction was of 'an abstract kind' and ought to be concrete. Forthwith, 'Object lessons' began to fill the most prominent place in our time tables; and nine-tenths of the school books then published were upon this subject. After this came the Tonic Sol-fa system of musical notation; and the lower classes were to be elevated by means of the moveable 'doh.' At the present day we find that our leading educationalists have made the interesting discovery that the great agent of social regeneration is to be found in the ability to interlace little strips of various coloured paper; to design by magical foldings and cuttings; to model in clay, and know how to use carpenters' tools. As all these successive movements have been in operation among us collectively, so in like manner there have been individual minds who have each held that some *special* subject is far and away the most important in the great work of training the human mind. Hence it is that among inspectors we have some with very strong leanings towards particular subjects. One thinks that mental arithmetic is *the* thing. Another pins his faith to grammar. Another to history. Yet another to object lessons; and so on. Teachers speak of these things as Mr. So-and-so's strong points; and other teachers call them 'fads.'

But amidst all this divergence, are we not greatly in danger of losing sight of the very first principles of education? What are we doing? What is our work? Is it *really* our business to fit boys to perform some special duty in after life? To walk in some predetermined groove? Surely not so. Given a sentient being, with latent powers of mind, heart, and body, it must undoubtedly be our endeavour so to develop and strengthen these as to furnish their possessor with the ability to educate himself to fill worthily whatever position he may eventually reach.

It is, however, unfortunately only too true, that if a good report is to be obtained from such an inspector as I have here described, some extra attention must be given to those subjects to which he has a decided leaning. If we have the same inspector year after year, we get to know his 'strong points' or 'fads'; and it is absolutely necessary to give special consideration to these. Personally, I have never met with one of these 'faddists'; but many teachers have had them in their schools, and all my professional brethren tell me the idiosyncracies of such inspectors have to be studied.

(*To be continued.*)

TEACHERS' DRAWING LESSONS.

MODEL DRAWING FOR STANDARD V.

BY E. BUFFERY RIDGE,
Art Master under the London School Board.

LESSON XXII.

Cylinder standing.

Place the solid on a blackboard or on the floor, the top of the cylinder below the eye-level. Chalk a circle round the bottom of the cylinder, and then set the model by the side of the circle as shown in the sketch. The class can now

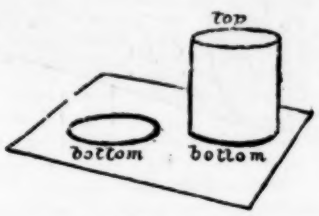

Fig. 31.

compare the ellipses which represent the top and bottom ends of the cylinder. Long *axes* equal, short axis in the top ellipse shorter than in the bottom ellipse. Refer to previous lesson and ask for explanation, which will be readily given. Replace cylinder on circle. Draw *ab* and suppose it to be a stick

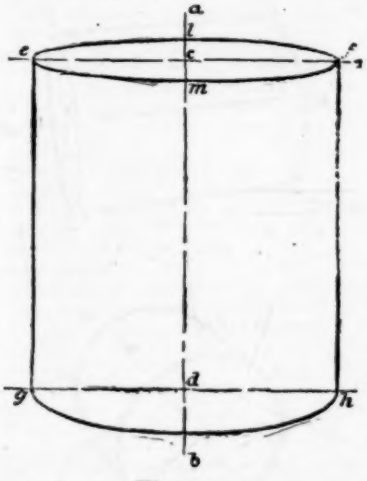

Fig. 32.

running through the middle of the cylinder from top to bottom. Another axis—the axis of the cylinder. Draw two cross lines at right angles to *ab*, and as far apart as the top and bottom of the cylinder are to be in the drawing. Compare the width of the model with its height, and mark *ef*, *gh*, bearing the right proportion with *cd*. Draw the side lines—then the drawing represents the cylinder without the ellipses at the top and bottom.

Now look at the top ellipse. How wide is it—*i.e.*, how long is its short axis? Find out by measurement, and mark half its length at *l* and *m*. Draw the top ellipse. If it looks too wide, alter it—make it narrower, but always remember to keep it symmetrical.

The bottom ellipse is wider, but only half of it can be seen. Mark *dn* greater than *cm*, and draw the half ellipse.

This lesson should be repeated till every part of it is thoroughly well learnt, and the figure can be drawn quite well from memory. Two cylinders at least should be used, one of them flat, like a cheese or grindstone.

LESSON XXIII.

Cone standing.

Begin as in previous lesson, showing a chalk circle and the solid side by side. Draw the ellipse—the whole of it, because more than half can be seen. Find the height by comparison with the width *ab* and mark it at *c*. Draw straight lines from the apex *c* to touch the base at *e* and *f*, points in the ellipse a little behind *a* and *b*. These side lines must be tangential to the curve, not drawn to the points *a* and *b*, and must *always* be equal in length. Rub out the part of the

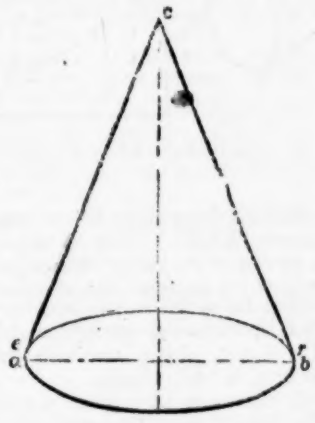

Fig. 33.

curve between *e* and *f*. Repeat till this is known as well as is the cylinder.

LESSON XXIV.

Upright Cone or Cylinder standing on rectangular surface, such as a sheet of drawing or blotting paper, or a drawing-board.

Draw the horizontal surface (of the board or paper)

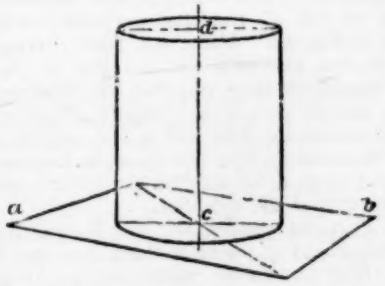

Fig. 34.

first, then one diagonal, and mark the middle *c*. Through *c* draw a vertical line the height of the solid when compared with the length of the four-sided figure *ab*. Draw horizontal cross lines through *c* and *d*, find the proportionate width, and complete the cylinder as in Fig. 32. Some care and perseverance will be necessary to get the lines through *c* really vertical and horizontal, especially in the case of the latter. A want of due proportion between the two figures is a common fault. See Lesson XVI. When the cone is used, proceed in the same manner, getting one horizontal and one vertical axis, and completing as shown in the previous lesson.

Lesson XXV.

Cone lying on its side.

The papers should be held vertically, and a slight sketch made in that position. Draw *ab* and *ac* parallel to AB and AC—make them equal—join *bc*, and mark the width *ed* in right proportion to *bc*. The skeleton

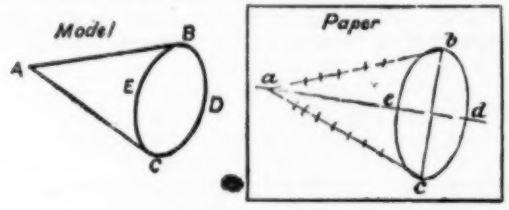

Fig. 35

drawing so obtained should then be corrected in accordance with Lesson XXIII. Draw an axial line from *a* through the centre of *bc*, verify the proportions, rub out the side lines *ab*, *ac*, draw the ellipse, re-draw the side lines tangential to the ellipse, and not running to *b* and *c*. Set the drawing upright and see if it is symmetrical; if not, either the side lines are not equal or the curve is badly drawn.

Repeat with the cone in various positions, always following the same plan. When the apex is in front, a part of the ellipse will be unseen, and must be rubbed out in finishing the drawing, as in Fig. 33. Note that the lines *ad*, *bc*, may occupy *any* position with relation to the ground, but must *always* be at right angles to each other.

Lesson XXVI.

Cylinder lying on its side.

Prepare a cylinder by pasting coloured paper over one half of the curved surface and the corresponding half of one end. Place it on the floor in the corner of the room, so that all the class get some such view as is shown in Fig. 36. Point out that although *ac* is an upright line, and *ab* is the top line of the model, they are neither of them of use in the drawing, because the class can see part of the cylinder *above*, or beyond *ab*. The outside top line will be *ef*, and to get that *eg* must be drawn. The line *eg* is the long axis of the ellipse, and must invariably be drawn at right angles to *mn*, the axis of the cylinder.

Holding up the papers, the pupils can draw lines parallel to *ef* and *go*, with a third line, *mn*, half-way between them, and on *mn* mark points at *p* and *q* to indicate the comparative length, which must be taken from *rn* or *go* (not from *mn*) and compared with the width or thickness of the cylinder as shown at *eg*, or across at any other point. Make sure that *eg* and *fo*

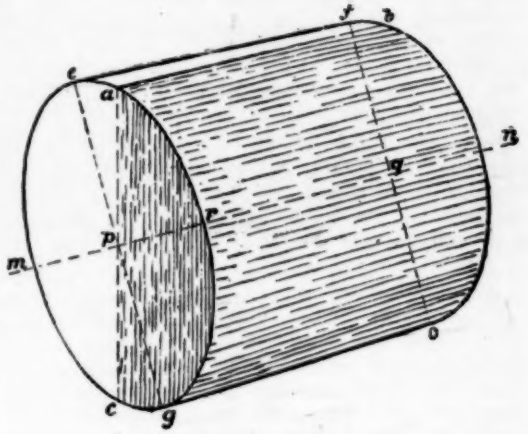

Fig. 36.

are equally divided by *mn*, and cross it at right angles; also that *fo* is shorter than *eg*, as *ef* and *go* are vanishing lines. Get the width *mr*, as before, and *qn* rather greater than *pr*—the right-hand end of the cylinder being farther away from the eye than the left causes the side lines to vanish and the further end to appear smaller but rounder than the near end. Draw the curves and complete the figure.

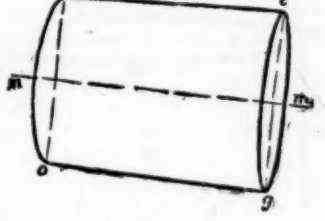

Fig. 37.

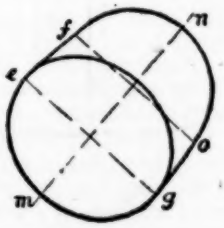

Fig. 38.

Draw other views on the blackboard on the same lines, showing that as the inclination of the side lines of the figure increases they get shorter, while the ellipses are turned more to the front and get rounder. Compare with lines of cube and other figures.

(*To be continued.*)

OCCASIONAL EXAMINATION PAPER.

WITH a view to making sure that the teachers of French in the evening classes should be only such as possess sound qualifications for the task, the School Board for London recently held an examination of those teachers who wished to be recognised as properly qualified to undertake the teaching of French. The Board secured the services of M. De Fontanier as examiner.

As many as eighty-three teachers, we are told, entered themselves for examination, and paid the small fee charged towards defraying the expenses. On an appointed evening they presented themselves, and were engaged from seven till ten o'clock in answering the set of questions placed before them. The result must have been very disappointing to many, for it appears that only eight persons satisfied the examiner.

Whether this result is to be explained on the ground of general unpreparedness, or by the adoption of a very high standard, we are not concerned to inquire. We have observed, however, that the paper given contains tests requiring knowledge of technical expressions, and we have thought these exercises would afford capital practice for teachers and other candidates for examinations in French. We accordingly print the set of questions given and invite our readers to send in papers of answers. Next month we hope to give a set of model answers by a highly qualified teacher of the French language.

EXAMINATION OF TEACHERS IN FRENCH.

Tuesday, September 13th, 1892. 7 to 10 p.m.

Examiner: M. DE FONTANIER.

1. Form ten phrases in French with the following verbs—each sentence throughout this examination to be headed thus (*a*) (*b*) (*c*), etc., and to begin a new line—Se lever, aller, venir, avancer, s'arrêter, s'asseoir, se placer, se coucher, attendre, courir, marcher, se tenir tranquille, Ex.
   (*a*) I get up early every morning.
   (*b*) I shall go to Paris next week if I am well enough, etc., etc.

2. Give the plural of clou, chou, oeil (two meanings), bétail, travail, éventail, soupirail, bal, amiral, feu (fire), feu (late), and form five phrases embodying five of the above words.

3. Turn into French—
   (*a*) There are eleven books on the shelf;
   (*b*) Six are yours, three are mine, and two are my nephew's.
   (*c*) We have bought some engravings, some very beautiful engravings.
   (*d*) I never read novels—I do not care for them.
   (*e*) Will you tell me the time? It is half-past eleven.

4. Form adverbs of the following adjectives:—
Nouveau, bref, vif, poli, étourdi, gentil, commun, véhément, éloquent, savant.

5. Turn into French:—
Master: Dust the counter before you go.
Boy: I will, sir, on my return from the post.
Master: Pull down the blinds, the sun is spoiling the goods.
Boy: I cannot, sir; the cord is broken.
Master: Go and fetch the carpenter.

6. Give the French of—
To teach, to explain, to apply oneself, to conjugate, to mean, to derive, to follow, to dictate, to parse, and form four phrases.

7. Form five phrases commencing with the verbs—
   (*a*) Désirer que.
   (*b*) Douter que.
   (*c*) Ne pas croire que.
   (*d*) Ordonner que.
   (*e*) Vouloir que.

8. Give the French of—
Board school, School Board, boarding school, boarder, elementary school, schoolboy, schoolgirl, the blackboard, the lower forms, a day scholar, and form four phrases.

9. Write five sentences commencing with
   (*a*) Bien que.
   (*b*) Pourvu que.
   (*c*) Soit que.
   (*d*) A moins que.
   (*e*) Il importe que.

10. Turn into French—
The merchant who borrowed a large sum of money to speculate with on the Stock Exchange has been declared a bankrupt, and his goods and chattels have been sold by auction.

11. Construct a phrase embodying the following words—client, actionnaire, compagnie, se fonder.

12. Translate—
Les nouvelles agricoles de la dernière quinzaine sont devenues beaucoup moins sombres. Ceux-là mêmes qui regrettent que les écluses du ciel ne soient pas plus largement ouvertes, ne peuvent s'empêcher de la reconnaître, le peu d'eau tombée a singulièrement amélioré la situation. Les avoines en souffrance, dont beaucoup de cultivateurs n'attendaient rien, ont allongé leurs chaumes, et si leur paille est courte, on peut espérer de leurs grappes un rendement presque moyen. Les blés paraissent de plus en plus satisfaisants; ceux du lointain nous apparaissent avec cette teinte neutre qui, n'étant plus le vert, sans être encore le jaune, indique que la maturation approche. Les seigles ont blanchi, on va les abattre et il paraît que, si tardif qu'ait été le coup d'arrosoir, ils sont bien moins mauvais qu'on ne le craignait. Enfin, la vigueur avec laquelle nous voyons verdoyer les prairies artificielles dont on vient d'enlever la maigre première récolte nous permet d'espérer que la seconde coupe remédiera en partie au déficit de nos fourrages.

Le Temps, 8 juillet, 1892.

13. Translate into French—
The corn harvest has begun under the most favourable circumstances, so far as the weather is concerned, and, what is still better, with a decided improvement in most of the crops. Over 100 reports from correspondents in every county in England, show that barley is the best crop of the year, while oats have improved somewhat, and are now spoken of as the second best. Wheat is being attacked by rust, and needs all the sunshine possible now.

The Times, August 8th, 1892.

14. Compose ten phrases in French, embodying the following words:—
The departure, arrival, return-ticket, luggage, custom-house officer, waiting-room, the porter, cab, the fare, terminus. Ex:—
   (*a*) The departure of the train was delayed by an accident on the line, etc., etc.

15. Express your views, in a few concise lines in French, on the method of teaching the French language that you consider best adapted to the Board Schools.

Observe.—Should any word have escaped your memory, leave a blank, and complete your sentence.

Our readers should note that where 'phrases' are asked for in the examination paper, sentences are required, not simply detached parts of sentences.

—o—

NEW COMPOSITION STORIES.—STANDARD V.

Suitable for 'Unseen Tests' in Reading also.

No. 235.

THE BITER BITTEN.—Once a man travelling with a bear found himself at nightfall near a lonely farmhouse. He begged hospitality for the night of the farmer. This was willingly granted for the man, but the bear was objected to. At length the farmer consented to put the animal into the pig-sty, and the pig was put into the stable. That night had been fixed on by three men for robbing the sty. One man came quietly to it, and hearing a low grunt thought he was sure of the pig. He began to drive out the pig, as he thought, when the bear seized him in his arms and hurled him senseless upon the ground. The second thief not seeing his companion appear, advanced, but the bear dealt him such a blow on the head that he fell stunned over his companion. The third man was so frightened that his cries for help soon brought the farmer and the owner of the bear to the spot. They found that the bear had done the work of a policeman. The pig was safe, and the three thieves were easily captured.

No. 236.

THE CONJURER AND THE EGGS.—A conjurer, when in Bristol, passed through the market, and seeing a woman with a basket of eggs, inquired how she sold them, and being told 'A penny each,' said he would buy one first to see if they were good. He broke it before the woman, and out dropped a sovereign (as she supposed). Being thus fortunate, he bought another and broke it, when another sovereign fell out. The egg-dealer looked amazed. He then said: 'I will take all the eggs.' But the woman shrewdly said, 'No, no,' and sitting down, she broke egg after egg, but no more sovereigns appeared. She then became alarmed for the loss of her eggs, and even shed tears. The next day the conjurer met the old woman, and finding how much she grieved for the loss of her stock-in-trade, he gave her half-a-crown to console her.

No. 237.

SAVED FROM DEATH.—When William III. was besieging a certain town, two of his soldiers were sentenced to death for plundering. They were both brave men, and the general, who wished to save one of them, lessened the severity of the sentence so far as to allow them to throw at dice for their life. On the morning appointed for their execution, they were led to a drum in order thereupon to cast the decisive throw. With a trembling hand one of the men took up the dice; he threw two sixes. The next moment the other threw two sixes also. The officer and bystanders were astonished at this strange occurrence, and both men were commanded to throw again. This was done, the dice again cast, and both threw up two fives. Those standing by asked that the men should be pardoned. But the reply was that they should decide their lot with new dice. Once more they cast, and lo! each threw two fours. So astounded was the officer in command that he determined to refer the matter to the commander-in-chief himself, who was every moment expected. On his arrival, he pardoned both.

No. 238.

THE LADY AND THE GLOVE.—At the Court of the King of France a fight of lions one day took place. A lady of the Court threw her glove among the beasts, and called upon her lover, one of the bravest and most gallant captains of France, to recover it for her. He wrapped his cloak round his left arm, sprang into the arena, and with drawn sword advanced boldly upon the animals. They were awed by his intrepidity, and did not touch him; so he picked up the glove, and returned safely to the place where he had been sitting with the lady. But when he came there, he threw the glove in her face, and said that he renounced the love of one who out of vanity could expose a lover to such useless peril.

No. 239.

THE NOBLE SOLDIER.—Some time since a great battle was fought, and at the end of the day a sentry was posted near the battlefield. Worn out with fatigue, after great difficulty he managed to obtain a bottle of wine. As he was about to raise it to his lips one of the enemy's soldiers, who was lying on the ground dangerously wounded, begged for a drink. The sentry, moved with pity, bent over the man, and held the bottle to his lips. Just as he was doing so he felt a ball whizz past his ear. This was from a pistol which the cowardly man on the ground had fired at him. The sentry at once stood up, and drank half the contents of his bottle. He then handed the remainder to his foe, saying, 'You coward, now you shall have only half of it.'

No. 240.

THE CAPTAIN'S PUDDING.—The following story is told of the captain of a ship and his mate. Whenever there was a currant-pudding made, by the captain's orders all the currants were put into one end of it, and that end placed next to the captain, who, after helping himself, passed it to the mate, who never found any currants in his part of it. After this game had been played for some time, the mate prevailed on the steward to place the end which had the currants in it next to himself. The captain no sooner perceived that the wrong end of the pudding was turned towards him than, picking up the dish and turning it round, as if to examine it, he said, 'This dish cost me a couple of shillings,' and put it down, as if without design, with the currant-end next to himself. 'Is it possible?' said the mate, taking up the dish; 'I shouldn't have thought it was worth more than a shilling.' And, as if in perfect innocence, he put the dish down with the currants next to himself. The captain looked at the mate; the mate looked at the captain. Then the captain laughed, and the mate also laughed. 'I'll tell you what, young man,' said the captain; 'you've found me out; so we'll just cut the pudding lengthwise this time, and have the currants fairly distributed hereafter.'

No. 241.

SURPRISED!—A certain nobleman used to go about Naples attended by a large, ferocious bull-dog. Having decided upon going to Rome, he proceeded to the station, and took his place in a first-class carriage, the dog taking up a position on the seat opposite his master. The platform inspector declared that the bulldog should not travel in a passenger carriage. 'Very well, then; take him out,' said the nobleman. In vain the official expostulated; the nobleman merely reiterated his former reply, a piece of advice which was not followed, and apparently master of the situation, he threw himself back in his seat, and calmly lighted a cigar. But the Italians were not to be outdone, and quietly detaching the carriage in which the Englishman was seated, they made up the train without the car, and started it off. The nobleman sat quietly smoking for about a quarter of an hour, and then, surprised at the delay, thrust his head out of the window, and asked when the train was going to start. His feelings when the situation was described to him may be imagined.

No. 242.

FAITHFUL SLAVES.—When the Romans were besieging a certain town, two slaves escaped from the city into their camp. But when the city was taken by storm, and the Roman soldiers began to plunder it, the slaves ran to the house of their late mistress, seized her and carried her off. When making their way through the troops, they were asked by some of the soldiers whom she was, and what they were going to do with her. 'She was our mistress,' they answered. 'We are now going to take vengeance for all the cruelties we have suffered at her hands.' They then carried her out to a place of hiding, where they kept her safe till the city was quiet again, when they took her back to her own house, and became her faithful servants once more. In the old days, she had been a kind mistress to them, and this was the manner in which they showed their gratitude.

No. 243.

THE MONKEY AND THE PIE.—An Indian had a monkey that he had brought up from babyhood. The pair were fast friends, the monkey being a faithful attendant on his master, and as good as a watch-dog. One day the Indian made a pie for dinner, and left it to cook on a charcoal fire while he went for a walk. As the cooking proceeded, the savoury smell was too much for the monkey. It raised the crust and tasted the chicken. Finding the food very tasty, it ate more and more, till nothing but the crust remained. Then it remembered its master, who would shortly come back hungry and ready to enjoy his meal. What was to be done? The sharp eyes of the monkey detected some crows not far away, so, without loss of time, it lay down on the ground as if dead. By-and-by a crow came along and pecked at the monkey, which seized the bird in a twinkling, strangled it, stripped off the feathers, placed it in pieces in the dish, covered it over with the crust, and then contentedly awaited the return of the Indian, to whom the whole incident was afterwards related.

No. 244.

A SAD STORY.—The following is rather a pathetic and true hospital story. A boy of seven, playing marbles in the street on his way from school, was run over and knocked down by a passing horse and cart, being so severely injured that he had to be taken to the Cottage Hospital. One of his legs was found to be badly crushed, and amputation of the thigh proved necessary. Next day, on the morning round, the surgeon explained to his small patient that his leg had been cut off, and felt rather disconcerted when the little fellow looked up and said, 'Please, doctor, will it grow again?

No. 245.

AN INTELLIGENT DOG.—This is a true story about a dog. Mr. Hunt had a little black-and-tan spaniel, called Jack. One day he had a letter telling him to go to London on business. He took little Jack with him. When they got there, the gentleman went to an hotel. That night Jack was wandering over the place, and going into the yard at the back, a big bull-dog caught him and nearly killed him. His master knew nothing of it at the time. The next morning Jack disappeared. Mr. Hunt looked for him everywhere, and even advertised, but nothing was heard of him. Some days after, he had a letter from his home in Yorkshire, saying that Jack had appeared there suddenly, and after a few days' rest he had gone away again, and they found afterwards that one of their bloodhounds had gone too. Some time after, the two dogs appeared in London, and went straight to the hotel, and into the back yard, where the bloodhound fought the horrid bull-dog, and punished him severely.

No. 246.

A SAGACIOUS BIRD.—An engine-driver employed on the French Eastern Railway relates that for many years a certain small hawk has been in the habit of regularly flying along close behind the express train on the main line, and watching for the birds which experience has taught it will be frightened as the locomotive rushes along. The hawk will then, while the scared little birds are thinking more of the iron horse than of anything else, swoop down upon its prey with amazing swiftness, and carry it off in triumph; and should it happen to fail in its object, it will return again to continue its flight behind the carriages. We are told that it is the custom for that ingenious bird to allow the train when it leaves the station to have a start of about 150 or even 200 yards, and it will then easily—such is its marvellous power of flight—catch it up immediately; and although numerous attempts have often been made to capture or frighten it away, they have hitherto been unsuccessful.

No. 247.

THE REASON HE STAYED BEHIND.—A small boy in Derby, who had a great dislike for school, one day came home for his dinner a little earlier than usual. 'Johnny,' said his mother angrily, 'you have been playing truant, you naughty boy. A dicky bird came in at the window and told me so.' The next day Johnny set out as usual for school. During the morning his mother heard a noise coming from the other side of the kitchen, and there she saw him crouching under the table near the window. 'You rascal, what are you doing there?' Seeing that he was discovered he crawled out, and holding up a stone which he had in his hand, said, 'I was only waiting to kill that dicky bird.'

No. 248.

DETECTING A THIEF.—A gentleman living in the West Indies had a large sugar plantation, and kept many slaves. He was often robbed, so on one occasion, after losing a large sum, he called his slaves together. 'My friends,' said he, 'I had a wonderful dream in the night. I dreamt that the person who stole my money should have at this instant a feather on the tip of his nose.' The thief, on hearing this, immediately put his hand to his nose. 'It is you, sir,' cried the master, 'who robbed me!' The simple negro confessed the theft, and the master recovered his money.

No. 249.

THIEVES FOUND OUT.—A Russian labourer, who had deposited in a purse which he wore at his breast the hard-earned savings of his life, was murdered by two of his companions for the sake of the little treasure. They escaped to a neighbouring forest, but were followed by two dogs belonging to the deceased, which would on no account quit them. The two men did everything they could to appease the animals, but in vain. They then tried to kill them, but the dogs were on their guard, and kept out of reach, continuing to howl dreadfully. Reduced to despair, the two men, after several days, returned to the village and gave themselves up to justice.

No. 250.

SAGACITY OF A HORSE.—One evening, about ten years ago, a farmer was driving his children home from seeing some friends, when a very thick fog came on, and as he had no lamps, he soon lost his way. Presently, his horse stopped, and no amount of coaxing or whipping would make it go on. At last, the farmer got out, struck some matches, and found he was on the edge of a deep precipice. If the horse had gone a step further forward all would have been dashed to pieces.

No. 251.

A LOWLY HOME.—Two or three years ago, a man was walking along a shady lane in the North of England. By the roadside lay an old tin teapot. In an idle kind of way, he was just going to kick it, when to his surprise out flew a robin. He instantly stooped to examine it. Yes, sure enough, it was a robin's nest, and in it were five dear little speckled eggs. He allowed them to remain, and returned after a few days. This time five little heads were to be seen looking out of the teapot. The old robin was left in peace, and brought up her family and taught them to fly without being troubled by anyone.

No. 252.

A GOOD CATCH!—A gentleman returning from an unsuccessful fishing expedition encountered on the way a professional angler. 'My friend,' said the former, 'I rejoice to see that you have been more successful than I. Would you, for a consideration, part with a few pounds of your fish, that I may not return to my family empty-handed?' The angler with great promptitude said he would, and presently the gentleman went on his way with the trout caught by his more successful acquaintance. A little later on he met another man, who eyed his fish and paused to speak with him. 'Sir,' said he, presently, 'did you catch those fish yourself?' The gentleman said 'Yes,' and asserted, moreover, that he was ashamed to take home so few, saying that his usual catch was much larger. 'Indeed,' said the other; 'then come with me, for I am a detective, and have for a long time been looking for men who catch trout out of season.' Whereupon he took him before a justice of the peace, who fined him heavily.

No. 253.

CLEVERNESS OF A SHEEP-DOG. Some years ago there was a terrific snowstorm in Scotland. The farmers were very anxious about their sheep, for there were hundreds of them unsheltered on the hills at the time. In one farm no fewer than 300 were missing, and the farmer with his men, and a faithful sheep-dog named 'Rough,' started in search for them. When they reached the fields, nothing was to be seen but great masses and drifts of snow several feet thick, under which the poor sheep were buried. The men tried to penetrate the snow in order to get at the missing animals, but their labour was almost in vain, for it was only by the merest chance that they came across a sheep. The snow was still falling fast when 'Rough' came to the rescue. He understood what was to be done, and running quickly over the snow with short sharp barks, he dug with his paws little holes. The men went to work beneath these marks, and under each they found a sheep. Thus they worked hard all night, and nearly all were saved. The farmer was very thankful to his clever dog, and told his friends that had it not been for 'Rough' he would have lost every one of his sheep that night. As it was they had suffered but little, and, with careful attention, soon recovered.

No. 254.

DOCTORING THE WRONG MAN.—An army surgeon was one night annoyed by the coughing of the sentry outside his tent. Unable to sleep, he got up, saw the man, and decided that something must be done for him. He therefore prepared him a strong dose of medicine. Going out again he ordered the man to take it. The sentry refused, but the surgeon sternly insisted, and the man was finally induced to swallow it. The result was evidently satisfactory. The sound of coughing ceased in the camp, and the surgeon went to sleep with the consciousness of having done a good deed. The next morning he was summoned by the officer in command, who said to him: 'How is this, sir? I hear serious complaints about you in relation to the sentries. One of them has reported that, in the middle of the night you came out of your tent, and made him swallow some medicine which might have made him ill.' It turned out that the guard had been relieved while the surgeon was compounding his mixture, and he had therefore doctored the wrong man.

No. 255.

A YELLOW FACE.—A whisky dealer one day met one of his late customers, and said to him, 'Why is it that you do not come to see me now, my friend, as you used to?' 'I cannot do any such thing now,' was the reply, 'Father Mathew has desired me to keep from temptation.' 'I am sorry to see you looking so sadly; your face is quite yellow!' 'Why,' laughed the man, 'if my face is yellow, so is my pocket, too,' and he pulled out four sovereigns, which he was going to pay into the bank.

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NEW DICTATION TESTS.

Suitable for 'Unseen Tests' in Reading also.

STANDARD IV.

No. 196.

It is a common notion that when sea-gulls are seen many miles inland they are driven thus far from the sea-shore by stress of weather and force of the wind. This, however, is not the case; the cause of their being seen so far from their usual home is that in their search for food they migrate from the south to the east coast, for wherever the sprat, pilchard, and herring are found in large quantities these birds are most seen.

No. 197.

A gentleman while going for a drive in a sledge had an accident, which was, fortunately, without the dangerous consequences which might easily have ensued. He had a revolver in his pocket, and, in taking it out to put it in a place of safety during his journey, the weapon went off, lodging the bullet in his leg. The ball is to be extracted, but the wound is in no way dangerous.

No. 198.

The uses to which the electric light is being put are many, but the latest is somewhat novel. Since the introduction of the ticket system the London General Omnibus Company have employed a number of inspectors to examine tickets, and at night, these men have experienced great difficulty in seeing the numbers in a dimly-lighted 'bus. Therefore the company have provided them with tiny electric lamps, which are placed in their button-holes, and the light of which can be turned on and off at will.

No. 199.

In proceeding along the great thoroughfares of the metropolis, the stranger is astonished at the vast crowds of people he meets. Whichever side of the street he is on, or in whatever direction he looks, he sees nothing on the pavement but a dense mass of human beings, not stationary or inactive, but all proceeding on their respective errands with as much expedition as the crowded state of the thoroughfare will allow. There is no place in which the injunction, 'Mind your own business,' is so well attended to as in London.

No. 200.

A native wearing more than a hundredweight of iron chains and bands on him, recently left an Indian railway station. The railway authorities declined to allow him to travel as a passenger, but sent him as goods by weight, in spite of his argument that native women were never charged for their anklets and bangles. The iron absorbed the heat so much that the man had to be constantly sprinkled with water. He was an old man, and nearly died at the station.—(H.M.I.'s TEST.)

No. 201.

The smallest, simplest, and best protected post-office in the world consists of a small painted keg or cask, and is chained to the rocks in a manner so that it floats free. Each passing ship sends a boat to take letters out and put others in. This curious post-office is unprovided with a post-master, and is therefore under the protection of all the navies of the world. Never in the history of this unique 'office' has its privilege been abused.

No. 202.

The reporter of a well-known south coast journal once found himself without any paper whilst following the Volunteers during their annual review at Easter, and it was necessary he should dispatch some 'copy' to the nearest post-office, some miles off. Tearing out the lining of his hat he pencilled his despatch upon it, and sent it off by a country lad. The surprise of his editor when he received this curious contribution can be better imagined than described.

No. 203.

A porter at the docks had an unpleasant, though not dangerous, experience the other day. As he was about to handle a trunk, which had been just landed from a foreign vessel, his hand came in contact with a cold object. An examination showed that he had grasped a large and particularly hideous snake, which was just emerging from a hole in the trunk. The reptile, which was different from any he had seen, was killed, and found not to have been a poisonous species.

No. 204.

There is no such thing as neighbours in London—in the usual meaning of the word. You may live for half a century in one house without knowing the name of the person who lives next door; it is quite possible, indeed, you may not even know him by sight. So intent is everyone on his own business, and so little interested in that of others, that you may, if you please, walk on all-fours in the public streets without hardly anyone staying to bestow a look on you.

No. 205.

Fresh air is as essential to health and life in one season as in another, and yet, from November until May, we do our best to barricade our dwellings against it. It is impossible to prevent so close a besieger from gaining the advantage now and then, but we do what we can to keep it out of our houses. We fortify our doors and windows with contrivances of all kinds to exclude it. If we cannot altogether keep it out, we can poison it when it gets in.

No. 206.

People in the country have, almost without exception, an impression that one cannot walk the streets of London without personal danger. There could not be a greater mistake, for less than three hundred people are run over in the course of the year. Even in such cases it is generally through carelessness on the part of the injured persons. Perhaps there is no town in the world where the safety of the subject is greater than in the metropolis of England.

No. 207.

Occasional hurry is hardly to be avoided, society being what it is; but the habit should be guarded against as one of the surest promoters of ill-temper and ill-health. If necessary, less work should be done; but in many cases nothing is needed but a wiser economy of time. Some of the worst victims are men who dally with their work until time presses them, and then crowd themselves into a fever, pitying themselves meanwhile because they are so sadly driven.

No. 208.

To the stranger's ears, the loud and everlasting rattling of the countless vehicles which ply in the streets of London is an intolerable annoyance. Conversation with a friend with whom one chances to meet at midday in the leading streets of London is almost out of the question. Both voices are almost drowned by the loud clatter caused by the wheels of the various carts which crowd the great thoroughfares. In the City, of course, this is not the case, because of the wood paving rendering the sound almost noiseless.

No. 209.

When a nurse has finished her three years of training within the wards of the hospital many paths lie open to her. She can join the ranks of the Army and Navy Sisters, or go out to India or Australia. She can undertake private work, and nurse the well-to-do sick in their own homes; or she can join a district institution, and go round visiting and tending the poor who are ill. As a rule, a nurse who has spent three years at the hard work of ward nursing, with its perpetual discipline and poor pay, takes up private nursing.

No. 210

There is no other way to teach a child truthfulness except example. One fact that parents seldom take into account in the training of their children in the ways of truthfulness is that a young child is not born with an instinct for truth-telling. The love of truth is an acquired virtue. A child can have it, but it must be taught it. And the way to teach truth is to live it. Never depart from the strictest truth with a child, and he will soon come to know what truth means. And be patient if his little feet follow your own in truth's highway, faltering sometimes.

No. 211.

The monkey's intelligence has never been able to arrive at a point which enables that animal to achieve the untying of a knot. You may tie a monkey with a cord, fasten with the simplest form of common knot, and unless the beast can break the string or gnaw it in two he will never get loose. To untie the knot requires observation and reasoning power, and though a monkey may possess both, he has neither in a sufficient degree to enable him to overcome the difficulty.

No. 212.

There is a land, of every land the pride,
Beloved by heaven, o'er all the world beside;
A land of beauty, virtue, valour, truth,
Time-tutored age, and love-exalted youth.
The wandering mariner, whose eye explores
The wealthiest isles, the most enchanting shores,
Views not a realm so bountiful and fair,
Nor breathes the spirit of a purer air.

STANDARDS V.—VII.

No. 178.

Scientific investigators assert that in beginning to sleep the senses do not unitedly fall into a state of slumber, but drop off one after another. The sight ceases, in consequence of the protection of the eyelids, to receive impressions first, while all the other senses preserve their sensibility entire. The sense of taste is the next, and then the sense of smelling. The hearing is next in order, and last of all comes the sense of touch. Furthermore, the senses are thought to sleep with different degrees of profoundness. The sense of touch sleeps the most lightly, and is the most easily awakened; the next easiest is the hearing; the next is the sight, and the taste and smelling awake last.

No. 179.

As it stands, the new Royal College of Music will be a magnificent building, devoted to the study of the musical art in its strictest sense. Moreover, thanks to its numerous open scholarships, the poorest will be lodged, boarded, and taught upon precisely the same scale as the wealthiest. As this institution has been founded, and endowed to the extent of £100,000 or more, partly doubtless owing to Royal effort, but wholly by voluntary subscription, the result would seem to indicate that if we are not a musical nation, we are at any rate not sparing money in the endeavour to become so.

No. 180.

London is not only the metropolis of Great Britain, but also of the world. It is the great centre of civilisation. Here are congregated together, from all parts of the earth, the most distinguished men in every branch of literature, science, and art. Its moral and political influence is felt and admitted to the extremities of the civilised world. It yearly thrusts forth its thousands of missionaries to every section of the globe to advance the great cause of religious, intellectual, and social regeneration. Some go out professedly on this errand of mercy; others visit the remoter parts of the earth for purposes of trade and commerce, but contribute essentially to promote the cause of moral and social amelioration by their exemplary conduct.

No. 181.

Committees are beginning to want the services of the best-trained nurses they can obtain, and no very high degree of efficiency can be expected in one who is required to combine her proper duties with those of a caretaker and charwoman. Here, however, comes in the commercial view of the question, which is of great importance. A certain class of nurse may be had at almost any price; but the well-trained young woman, who knows her work, and on whom the doctor can rely, will not undertake district work (which is considered rather inferior to hospital work) unless she is adequately remunerated.

No. 182.

The fog which plunged London all day yesterday into Egyptian darkness must have impressed the least reflecting of Londoners with a sense of impotence. A city with five millions of people has the daylight blotted out by a dense and irritating thickness in the air, and nothing can be done, nothing can even be attempted, to remedy the evil. Every house is blackened, furniture and hangings are dirtied and spoiled, in many of the shops immense damage is done to delicate and costly goods, business of all kinds is hindered, and the traffic of the crowded streets is stilled to a funeral pace, yet nobody even asks why is such an evil so patiently endured. —(H.M.I.'s TEST).

No. 183.

The best hospitals now have private institutions attached to them and they pay their private nurses about £30 a year and perhaps a percentage on their earnings also. Some of the institutions in private hands, which are mere business speculations, pay their nurses only £20 or £25, and charge the public two guineas a week for their services. But nurses are too shrewd not to have a fair notion of their worth, and these institutions begin to find that they cannot get good nurses at this rate. Another very common arrangement is, when a doctor grows to know the value of some nurse in his wards, and tells her if she likes to set up for herself he will do his best to keep her employed.

No. 184.

The aim of all, whether they serve on public boards or in clubs, whether they take part in social movements or teach classes, whether they organise lectures or entertainments, whether they become school managers or children's playmates, whether they serve on committees or personally visit the poor, whether they preach the Gospel or serve human needs, is first to form friendships, and then through friendship to raise the standard of living and of life. It is a noble work; on the whole, it has been directed with great wisdom, and has been inspired with a splendid breadth and greatness of spirit. Its effect on the East-end has been far greater than it is possible to gauge.

No. 185.

The robin as we see him, or as we think we see him, is certainly one of the most engaging of birds. No other has such winning ways—such an air of perfect confidence. A little encouragement will induce him to enter the dining-room, and take his meals with the family. He will even trust himself to feed out of your hand in the garden. But, alas! there is quite another side to his character. The gentle and innocent bird of our childish fancy is a creation of romance. In all the feathered crowds that in winter time are wont to throw themselves on our bounty, there is not another so fierce, pugnacious, and bloodthirsty a duellist as that trim little figure with his bright colour, smart attitude, and dainty bow.

No. 186.

The mail-bag from Bradford to Halifax was, on Thursday night, cut open and robbed. The train was met by two officials from the post-office with a horse and van, and they took the bag out of the train and placed it in the van, after which they went into the station to meet the last train for the other mails. During their absence the bag was taken out by someone, who appears to have gone down the steps into the subway, where the bags were discovered yesterday morning, cut open, and only three large envelopes left in them. There were no registered letters. A dense fog hung over the town at the time of the robbery, which probably enabled the thief or thieves to escape observation.—(H.M.I.'s TEST.)

No. 187.

A poor blind monk first thought of cork for bottle stoppers. He was employed in a royal monastery as overseer of the extensive vineyards, being himself a manufacturer. Indeed, it is said he discovered, by experimenting with wines and grape juices, that highly-effervescing beverage known as champagne. Necessity in his case was doubtless the mother of his inventing the cork stopper, for his champagne must have needed a better stopper than was then employed—merely a bunch of flax soaked in oil. If he was the first to put a cork into a bottle, the world is indebted to him, since its elasticity and lightness render it invaluable for this use.

No. 188.

No reader of Tennyson can have failed to remark his sympathy with everything human, and the peculiar grace with which he expresses it. We feel as we read, that it is not only the poet's intellect that has been occupied in the production of the poems, but also his heart. The fiercer emotions which wrong and selfishness excite in a generous nature are nowhere more powerfully expressed than

in Tennyson's verse, while throughout his works he appears as the exponent of the belief that the various truly and purely natural forms of affection are the true means of our exaltation. These qualities, together with the purity of his diction and the chasteness of his metaphors, tempt us to pronounce the Laureate who has just passed from among us to be the greatest of the laureates.

No. 189.

Amongst the most promising operations in technical and manual training are those which are being carried on in the ordinary day-schools throughout the land. Drawing has become a compulsory subject of instruction, and only in very special cases is exemption allowed. The course in drawing is extensive, and success is rewarded by a special grant from the Science and Art Department. The same department has also formulated a scheme of manual instruction. Examinations have been held during the year, and for the first time grants have been made to schools for success in wood and ironwork. The activity which is being awakened by the new regulations may be best attested by the fact, that at several of the centres established for the instruction of teachers, the applications for places are so numerous that many have to be refused admission.

No. 190.

Hatfield House, where Lady Salisbury gives her annual county ball, is an ideal mansion for hospitality on a grand scale. The rooms are magnificent for ball purposes, especially the long gallery, which is placed at the disposal of the dancers, in addition to the winter dining-room. The house is profusely illuminated with electric light, and supper is served in the banqueting-hall, which can hardly be surpassed in England. Guests from London are conveyed by special train, and met at the station by an ample supply of private carriages, which transport them as commodiously as possible to the house.

No. 191.

About two thousand guests assembled at the City of London School last night at a conversazione given by the Committee of the School to the past and present pupils, their parents and friends. This was the first of its kind that has taken place, and its great success will probably cause the meeting to be made an annual event, and will tend greatly to increase the social intercourse of all connected with this great public school. The guests were received by the chairman of the committee, and the head master, in the library, and afterwards an excellent programme of music was performed in the Great Hall by students of the Guildhall School of Music. Two gymnastic displays were given by the scholars, and there were on view a beautiful collection of butterflies and pictures.—(H.M.I.'s TEST.)

No. 192.

So great has become the sale of Christmas trees in Vienna that they have overflowed the general markets, and it has been necessary to have special places assigned to them. A correspondent writes: 'The central market for the trees is on the outskirts of the inner town, outside the Protestant school, on a children's playground. During the last few days 50,000 fir-trees, big and little, have been put up in this square. The ground is a little uneven, and a large heap of sand rises in the middle. The Christmas trees cover the whole ground, with only narrow paths to allow of circulation, and thus a miniature forest has sprung up in the middle of the town.'

No. 193.

If we examine its influence upon the character of its possessor and its effects upon the welfare of mankind, we shall find that good temper is no slight or unimportant matter. Compare the good-tempered and the ill-tempered man in their own personality. The one is calm, happy, and peaceful; the other restless, discontented, and ill at ease; to the one, Nature and circumstances present their fairer and brighter side; to the other, everything is dark and thorny. One is charitably inclined to all the world; the other magnifies everything, and ignores every noble characteristic. One attracts by his sweetness and sympathy; the other repels by his angry spirit and his ill-natured or sarcastic words. A good bishop once said, 'Good temper is nine-tenths of Christianity,' and when we remember the many lovely and saintly qualities that cannot exist without it, we shall not consider the bishop's statement an extreme one.

NEW READING TESTS.—Standard III.

Suitable for 'Unseen Tests' in Dictation also.

22.—German school-children who attend the large public schools have to work very hard. Lessons begin early—in the summer about seven, and in the winter about half-past seven or eight. About eleven there is a short rest, and at twelve or half-past they go home to dinner. Lessons begin again at two, and go on till four. Then, of course, there are home lessons to be prepared. This is a very good day's work.

23.—The Swiss peasants, who in summer time find plenty of employment in tending their cows and goats, are frequently snowed up in the mountain villages for weeks together in the winter, and employ the long hours in cutting out bears from a piece of wood, often with no other tool than a strong knife, making also wooden nut-crackers, match-boxes, and curious little cottages.

24.—When cold weather comes on, hedgehogs find themselves getting very sleepy and somewhat chilly, so they seek for shelter under tree-roots and in holes of various kinds; here they roll themselves completely up in moss, dried leaves, or grass, which they have previously collected, go soundly asleep, remaining in a state of torpor till the green leaves are on the trees again.

25.—In some parts of China there are a few schools for young ladies, and instruction is given to them by tutors at home; but although two or three Chinese ladies have been celebrated for great attainments, these are quite the exceptions, and there are only a very few schools for any girls in China, except those belonging to the missions. Those for boys abound all over the country.

26.—A pretty little girl from London, between three and four years of age, was spending the Easter holidays with her grandmother at a farm. During her visit she was taken to see the cows milked, when she at once exclaimed, 'What a funny place to keep milk! Does grandmother always keep her milk there? My mother keeps hers in the cupboard.'

27.—They panted up the steep ascent, stumbling, falling, and bruising themselves and each other. They could not tell from one moment to another whether or not the roof would fall in, or the floor open and swallow them all up! Never was such a terrible race; yet no one felt tired or fatigued: all pressed on as quickly as possible, helping each other as well as they could.—(H.M.I.'s TEST.)

28.—'If each man in his measure
Would do a brother's part
To cast a ray of sunlight
Into a brother's heart,
How changed would be our country,
How changed would be our poor;
And then might Merry England
Deserve her name once more.'

OUR PUPIL TEACHERS' COURSE.

Remarks upon Grammar.

1. Analysis—

There is no doubt, judging from the tenour and wording of many questions, that, whilst any logical method of analysis is allowed, the ordinary tabular form is most approved of by the Departmental Examiners.

The simplest and best form, as may be seen in many of our model answers, is as appended :—

(*a*) *First Year, 22nd October, 1892.*

Say how many sentences there are in this passage ; point out the subject, predicate, object and extensions in each ; parse the words printed in italics :—

A mist *was driving* down the British *Channel*,
The day was just begun,
And through the window-pane on floor and panel
Streamed the red autumn sun.
It glanced on flowing flag and rippling pennon,
And the white *sails* of ships ;
And from the *frowning* rampart, the black cannon
Hailed it with feverish lips.—*Longfellow.*

	Sentence	Kind of Sentence	Subject		Predicate		Object	
			Simple	Enlargement	Simple	Extension	Simple	Enlargement
A	Line 1	Principal	mist	a	was driving	down the British Channel		
B	Line 2	Principal	day	the	was begun	just		
C	Lines 3 and 4	Principal	sun	the red autumn (and) (*connective*)	streamed	through the window-panes on floor and panel		
D	Lines 5 and 6	Principal	it		glanced	rest of lines		
E	Lines 7 and 8	Principal	cannon	the black with feverish lips	hailed	from the frowning rampart	it	

(*b*) *Second Year, 22nd October, 1892.*—Analyse the following sentence, and parse the italicised words :—

There may have been *men both* abler and greater
Than William Pitt, though *it* is not *easy to cite* them ;
But in all history there is no more patriotic spirit,
None more intrepid, and none more *pure*.
—*Lord Rosebery's Life of Pitt.*

	Sentence	Kind of Sentence	Subject		Predicate		Object	
			Simple	Enlargement	Simple	Extension	Simple	Enlargement
A	There may have been ....than William Pitt	Principal	men	(there) (*connective*) both abler ... ..William Pitt	may have been			
A2	than William Pitt [was great]	Adv. Mod. *abler* and *greater*	William Pitt	(than) (*connective*)	[was able and great]			
B	though it is not easy to cite them	Principal interpellated	it, to cite them		is easy	not		
C	But in all history there is ..... none more pure	Principal Adversative to A	spirit none none	(but) (*connective*) (there) (*connective*) no more patriotic more intrepid more pure	is	in all history		

In sentences A and C the verb 'to be' is not copulative, and therefore may be a Predicate by itself.

(*c*) *Third Year, 22nd October, 1892.*—Analyse the first four lines in the following passage and parse the first word in every line:—

Lo! the poor Indian whose untutored mind
Sees God in clouds and views him in the wind:
His soul proud science never taught to stray
Far as the solar walk, or milky way;
Yet simple nature to his hope has given
Behind the cloud-topped hill, a humbler heaven,
Some safer world in depths of wood embraced,
Some happier island in the watery waste,
Where slaves once more their native land behold,
No fiends torment, nor Christians thirst for gold.

	Sentence	Kind of Sentence	Subject		Predicate.		Object.	
			Simple	Enlargement	Simple	Extension	Simple	Enlargement
A	Lo! the poor Indian ....in the wind	Principal complex	[You]		lo! = look		Indian	the poor .. .... in the wind
A2	Whose untutored mind sees God in clouds	Adj., qual. *Indian*	mind	whose untutored	sees	in clouds	God	
A3	And views....in the wind	Adj., qual. *Indian*	mind	whose untutored	views	in the wind	Him	
B	His soul proud science.... milky way	Principal complex	science	proud	taught	never far as the.. ..milky way	(1) soul (2) to stray	his
B2	The solar walk [is]	Adv., mod. *far*	walk	the solar	[is]			
B3	This milky way [is]	Adv., mod. *far*	way	the milky	[is]			

Taught governs two objects, one of the person (*soul*) and the other of the thing (to stray). Some grammarians would call soul the indirect object.

In adjective and adverbial sentences it is best to mention the very word qualified.

Lo! is here taken as a verb, but it might with equal, and perhaps superior accuracy, have been put in the predicate as an interjection governing *Indian*. Very few people are aware of the assertive and governing power of interjections. Interjections, like verbs, make an assertion. They may be termed *primitive verbs*.

Compare '*O* that I had the wings of a dove.' Here '*O*' governs the noun sentence '*that I had the wings of a dove.*'

Thus also Latin *utinam* and Greek (ὄφελε and) εἴθε are employed.

Similarly the nominative of address (vocative case) being somewhat of an interjection may be followed by a subordinate sentence, *e.g.*—

Ah! happy woods, ah! pleasing shade.
Ah! fields beloved in vain,
Through which my careless childhood strayed
A stranger yet to pain.—*Gray.*

II. Parsing.

(*a*) *First Year.*

was driving Verb, irreg., intrans., indic., imperfect, sing., 3rd, agrees with subject *mist* (1).

Channel Prop. noun, sing., 3rd, neut., obj. case, governed by *down* (2).

Streamed Verb, regular, intrans., indic., past., sing., 3rd, agrees with subject *sun* (1).

It Pers. pron., sing., 3rd, neut., nom., subject to *glanced*.

sails Com. noun, plur., 3rd, neut., obj. case, governed by *on* (2).

frowning Verb, reg., intrans., present partic., qual. *rampart*.

(1.) Verbs agree with their subjects in number and person.

(2.) Prepositions govern nouns and pronouns in the objective case.

(3.) No contraction must be of less than three letters, and the abbreviation mark must not be omitted.

(4.) Don't say nom., but subj. to a verb.

(*b*) *Second Year.*

There Introductory adv.

men Com. noun, plur., 3rd, masc., nom., subj. after *may have been* (1).

both Correlative conj. joins *men* and *abler*.

Than Conjunct. of comparison, joins two sentences.

it Pers. pron., sing., 3rd, neut., nom., subj. in opposition '*to cite them*' used redundantly.

easy Adj. of quality, posit., qual. *it* predicatively (3).

to cite Verb, reg., trans., act., infin., gov. *them*.

But Disj. conj.. connecting two sentences.

None Negative, definite, numeral adjective used as pronoun, sing., 3rd, com. gend., nom., subj. to [*is*] (2).

(1.) As in example (*a*).

(2.) The subject of a verb when a noun or pronoun is in the nominative case.

(3.) Adjectives may be used in three ways:—i. Attributively; ii. Predicatively; iii. Factitively.

i. *Attributively*, 'A *white* man.'

ii. *Predicatively*, 'He is *white*.'

iii. *Factitively*, 'He painted the house *white*.'

(4.) *to cite* is a gerund = *citing*.

(*c*) *Third Year.*

Lo!	Contracted form of *look*, verb, reg., trans., act., imperative, present, sing., 2nd, agrees, with [*you*] and gov. *Indian* (1), (2).
Sees	Verb, irreg., trans., act., indic., present, sing., 3rd, agrees with *mind*, and governs *God* (1), (2).
His	Pers. pron., sing., 3rd, masc., poss., qual. *soul* (4).
Far	Adv. of place, mod. *to stray*.
Yet	Desj. conjunct., connects two sentences.
Behind	Prep., gov. *hill* (3).
Some	Indef. adj., qual. *world* attributively.
Some	Indef. adj., qual. *island* attributively.
Where	Connect. adv. of place, joins two sentences, and modif. *behold* (5).
No	Neg., def. num. adj., qual. *fiends*.

(1) As in example (*a*).

(2) Trans. verbs in the active voice govern nouns and pronouns in the obj. case.

(3) As in example (*a*).

(4) Poss. case partakes of the nature of an adj., and is best said to *qualify* (not govern) its possessed noun. This is well shown by the modern reluctance to use the possessive as the antecedent to a relative.

(5) Connective adverbs both join and modify. *Where* is also called a relative adverb, an adverbial conjunction, and a locative conjunction.

III. PARAPHRASING.

(*a*) *Second Year.*

Re-write the following passages in words of your own—

How many thousands of my poorest subjects
Are at this hour asleep! O gentle sleep,
Nature's soft nurse, how have I frighted thee,
That thou no more wilt weigh my eyelids down
And steep my senses in forgetfulness?
Why rather, sleep, liest thou in smoky cribs,
Upon uneasy pallets stretching thee,
And hushed with buzzing night-flies to thy slumber;
Than in the perfumed chamber of the great
Under the canopies of costly state,
And lulled with sounds of sweetest melody.

What multitudes of those over whom I rule are now reposing! How can I have driven away peaceful slumber which so gently refreshes and heals us? Not, as is customary, are mine eyes heavy with sleep, and my faculties oblivious and dormant. It is strange that repose is independent of external discomforts; that it visits unventilated hovels, uncomfortable beds and infested chambers, whilst it forsakes the scented couches of rulers, the most luxurious and expensive equipages of the rich, and is unsoothed by the most enchanting strains.

(*b*) *Third Year.*

Paraphrase the eleven lines of Third Year Analysis.

Behold the lowly Indian. He, untaught, finds the Deity revealed in the phenomena of Nature. The pride of knowledge has never diverted his attention to the contemplation of the earth's orbit or the celestial nebulæ. But he has not been given over to despair. His childlike ideas have created for him, above some snow-capped mountain, an unpretentious Elysium, either a securer realm embosomed in profound forests, or some fortunate isle lapped in the seas. There the enslaved revisits his fatherland, whither no longer cruel tyrants resort, and where the joint worship of God and Mammon is absent.

IV. ACCIDENCE, SYNTAX, ETC.

(*a*) *First Year.*

Give some examples of nouns which you know to be feminine by the form of the final syllable.

Host*ess*, test*atrix*, sultan*a*, hero*ine*, czar*ina*, vulp*en*, spins*ter*.

(*b*) What are the plurals of phenomenon, axis, syllabus, ox, sheep? Why are their plurals so formed?

Sing.	*Plural.*	*Reason.*
phenomenon (Gr.)	phenomena	*-a* is the Greek neuter plural ending of *phenomenon*.
axis (L.)	axes	*-es* is the Latin plural of *axis*.
syllabus (Gr. and L.)	syllabuses	*-es* is the English plural of *syllabus*, this noun having become anglicised.
ox (A.-S.)	oxen	*-en* is the old English plural of *ox*.
sheep	sheep	Many names denoting creatures found only in flocks, herds, coveys, etc., have the same form for both numbers. Compare *deer*, *grouse*.

(*c*) Give some examples of words that have no singular form.

Antipodes, bellows, credentials, dregs, entrails, folk, greaves, Grampians, etc.

These are generally names of articles with a plurality of parts.

(*d*) Adjectives of *Quality* are words attached to nouns to describe (or define by describing) what sort of things the nouns represent, *e.g.*, 'The cow is *black*;' 'I meant the *black* cow.'

Adjectives of *Quantity* are attached to nouns to denote the amount or number of things referred to. The latter kind are best classed separately as *Adjectives of Number*.

TABLE OF ADJECTIVES OF QUANTITY.

Quantitative.	*Numeral.*
A. *Definite* as *all*, *no*.	A. *Definite*—
B. *Indefinite*, as *some*, *much*, *little*.	(1) Cardinal, as *seven*, *a*.
	(2) Ordinal, as *seventh*.
	(3) Distributive, as *each*.
	(4) Multiplicative, as *seven-fold*.
	B. *Indefinite*, *any*, *many*, *most*, *several*.

(*e*) Give the past tense and past participle of the following verbs:—Lead, Teach, Fly, Sit, Lay, Rise, Lie.

	Present.	*Past.*	*Past Participle.*
1.	Lead	Led	Led
2.	Teach	Taught	Taught
3.	Fly (as a bird)	Flew	Flown
	Fly (as an army)	Fled	Fled
4.	Sit	Sat	Sat
5.	Lay	Laid	Laid
6.	Lie	Lay	Lain
	Lie (to tell a falsehood)	Lied	Lied
7.	Rise	Rose	Risen

(*f*) *Second and Third Years.*

What are inflexions? What is their use? Give some illustrations.

Inflexion (L. *flecto* = I bend) is the terminal change in a word to signify its grammatical use.

Nouns are inflected for gender, number, and case, as *hostess*, *boxes*, *man's*.

Pronouns are inflected for gender, number, person, and case, as *she*, *they*, *you*, *him*.

Adjectives are inflected for degree and number (Demonstratives), as *roughest*, *these*.

Verbs are inflected for voice, mood, number, and person, as *am loved*, if I *were*, *are*, *art*.

Adverbs are inflected for degree, as *fastest*.

(*g*) Explain and illustrate the terms subjunctive mood, potential mood, infinitive mood, passive voice, gerundive, participle, extended predicate, indirect object, root, suffix, and gerund.

(1) *The Subjunctive Mood* comprises those forms of the verb which express mental judgments as being contingent, conditional, or hypothetical, as 'If it were not so, I would have told you.'

(2) *The Potential Mood* is an unscientific term used to denote a compound form of the verb which expresses power or capability, as 'I could do it,' 'I may go.'

(3) *The Infinitive Mood* is that form which expresses without limitation by person, number, or mood, as '*To love* is human,' 'He is a man *to respect*,' 'I went *to buy* a bun.'

(4) *The Passive Voice* is the form taken by the verb when the doer is not the subject, *e.g.*, 'The man *was killed* by the soldier.'

(5) *The Gerundive* is really a verbal adjective, which, in English, usually takes the Infinitive Mood form, as 'This is an act *to be contemned*.' It must not be confounded with the gerund. (See 11.)

(6) *A Participle* is also a verbal adjective, as 'The boy *whistling* a tune, went his way;' 'The enemy *being defeated*, we captured the town.'

(7) *Extended Predicate* is a term employed very loosely in various ways, *e.g.*—

To denote *Extension of the Predicate*, as 'He lives *in a wood*.'

To denote a *Compound Predicate*, as 'They *appear to be honest*.' (Copulative verb.)

To denote a *Complex Predicate*, as 'The king *ought to slay* the man.' (Indeterminate and prolative verbs.)

(8) *The Indirect Object* chiefly denotes the recipient, and should be, strictly speaking, in the dative case, as 'He gave *me* a penny.'

It is most frequently met with after verbs of giving, owing, pleasing, promising, resembling, showing, telling, and thanking; and it occurs also in the impersonal verbs *meseems*, *methinks*.

(9) *The Root* of a word is that portion which is common to it and all kindred words, and upon which all inflexions and changes are based, *e.g.*, Commotion, Supernaturally.

(10) *A Suffix* or affix is appended to a word to modify its meaning and use; *e.g.*, see V. (*a*).

(11) *A Gerund* is a verbal noun, generally ending in *-ing*, as '*Reading* is useful.' It must not be confounded with the present participle. A gerund may take the infinitive mood form, as '*To err* is human.'

V. ETYMOLOGY.—(*a*) *First Year.*

Show the meaning of the part *in italics* in each of the following words; and give some other illustrations of the use of the same termination:—

	WORD	MEANING OF TERMINATION	OTHER INSTANCES
1	Woman*hood*	(A.S.) State of being	Manhood, widowhood, neigbourhood
2	Dark*ness*	(A.S.) Substantising abstract affix of adjectives	Calmness, wickedness, business
3	Posi*tion*	(L.) Resulting state	Station, motion, friction
4	Love*ly*	(A.S.) Similarity, adverbial inflection of adjectives	Godly, rascally, swiftly
5	Despot*ism*	(GR.) Result or state	Baptism, catechism, denominationalism
6	Move*ment*	(L.) Instrument, state	Document, pigment, tenement
7	Claim*ant*	(L.) Agent	Assistant, merchant, recreant

(*b*) *Second and Third Years.*—Give a list of ten terminations or suffixes by which you can tell that a word is derived from Latin. Explain their meaning, and give examples.

	TERMINATIONS		MEANING	EXAMPLES
1	A. *Noun.*	*-age*	Condition, occupation, collection, result	Savage, pilotage, tonnage, pillage
2		*-mony*	Result of quality or action	Ceremony, testimony, sanctimony
3		*-trix*	Female agent	Executrix, testatrix, cantatrice
4		*-ty*	Quality	Bounty, cruelty, vanity
5	B. *Adjective.*	*-lent*	Fulness	Opulent, corpulent, indolent
6		*-ic* (also Gr.)	Belonging to	Civic, barbaric, concentric
7		*-und*	Abounding in	Moribund, rotund, jocund
8	C. *Verb.*	*-ate, -ite, -it*	Verbalising	Indicate, indite, edit
9		*-esce*	Incipient action	Coalesce, effervesce, effloresce
10		*-fy*	To make, to be	Beautify, glorify, fructify

(*c*) Give the meaning of each part of the following words:—

	WORD		PREFIX	ROOT	SUFFIX
1	Indestructible	(L.)	*in-* = not; *de-* = down	*struo* = I build up	*-ible* = able to be
2	Porosity	(L. and Gr.)	——	*porus* (L.), *poros* (Gr.) = a passage	*-ity* = quality of; *-ous* (?) = full of
3	Connexion	(L.)	*con-* = together	*necto* = I tie	*-ion* = resulting state
4	Indifferent	(L.)	*in-* = not; *dis* = asunder	*fero* = I carry	*-ent* = possessing the quality of
5	Presuppose	(L.)	*pre-* = before; *sub* = under	*pono* = I place	——
6	Reprehend	(L.)	*re-* = again; *prae* (?) = before	*hend* (?) = hand; *prehendo* = to grasp	——
7	Forgo	(A.S.)	*for-* = away, without	*go* = to do, to live, to manage	N.B.—Not to be spelt *forego*
8	Forward	(A.S.)	*fore-* = before	See prefix.	*-ward* = in direction of
9	Abroad	(A.S.)	*a-* = on	*broad* = wide, large	——
10	Intercession	(L.)	*inter-* = between	*cedo* = I go	*-ion* = resulting action
11	Disreputable	(L.)	*dis-* = not; *re-* = again	*puto* = I think	*-able* = capacity of being

(*d*) *Third Year.*—Select from the passage set for paraphrasing and analysis (See I. (*c*) and III. (*b*)) any words of Latin origin, and give their derivations.

	WORD	PREFIX	ROOT	SUFFIX
1	poor	——	*pauper* = poor	——
2	Indian	*in* = in	*dens* = tooth, ivory	——
3	untutored	*un* = not	*tueor* = to watch	——
4	mind (?)	——	*mens* (?) = mind; *meinen* (Ger.) = to think	——
5	Science	——	*scientia* = knowledge (*scio* = I know)	*-ence* = state of
6	stray	extra- (L.); *es* (Fr.); *s* (Eng.)	extrarius (L.) = unrelated, one outside; (Fr.) *estrayer* = a stranger	——
7	solar	——	*sol* = sun	*-ar* = belonging to
8	simple	*sine-* = without	*plico* = I fold (simplex L.)	——
9	nature	——	*natus* = born (natura L.)	——
10	humble	——	*humus* = ground (humilis L.)	——
11	safer	——	*salvus* = safe	*-r* = comparative inflection
12	embraced	*em-* = in	*brachium* = arm;	——
13	native	——	*natus* = born (nativus L.)	——
14	torment	——	*torqueo* = I twist (tormentum L.)	——

VI. CORRECTIONS.

Third Year.

If there is anything wrong in the following sentences, correct it and give your reasons :—

(*a*) Mr. Jones and myself had decided to travel together.

(*b*) I shall have great pleasure in accepting your invitation.

(*c*) I should like much to have seen him.

(*d*) He was strongly averse to the proposal.

(*e*) I differ with you entirely.

(*f*) Scarcely had he gone than his brother arrived.

(*a*) Mr. Jones and *I*, etc. The reflexive or emphatic form *myself* is not required.

(*b*) I have great pleasure, etc. The future tense is incorrect, as the acceptance is present.

(*c*) I should much like, etc. The *much* is ambiguously placed. The whole sentence is, however, inelegant. Whether the sequence of tenses be wrong depends on the mental attitude of the speaker.

(*d*) He was *greatly* averse, etc. There is nothing of any moment incorrect; *greatly* or *widely* agrees, perhaps, a little better with the root meaning of *averse;* OR, *He was strongly adverse, etc.*

(*e*) I differ *from*. From is idiomatically correct, and is more consonant with the prefix *di*.

(*f*) Scarcely had he gone *when*. There is no comparison implied, therefore *than* is out of place.

VII. COMPOSITION.

For First Year Pupil Teachers on 22nd October, 1892, was as follows :—

[The passage should be read *twice* distinctly, and then the substance of it is to be written down from memory.]

The foraging expeditions of the ants are managed with as much order as those of a body of foragers in an army of soldiers. The best example of these foraging ants is the Driver Ant, which is found in America. In the animals of this species, the division of labour is wonderfully carried out, the workers being divided into labourers and soldiers. The latter are much larger than the former, and act as officers whilst the column is on the march. Sometimes these columns are some hundreds of yards in length. Occasionally they are in peril when overtaken by the sudden floods which often sweep down the regions they frequent. But, even then, the ants are equal to the occasion—they cling together in round masses like cricket balls, and, as a quantity of air is entangled amongst their limbs, float lightly on the surface of the water and roll over and over in the current, waiting to be washed ashore. The ant ball then separates, and none of its members are any the worse for their immersion.

PUPIL TEACHERS' EXAMINATION IN PRACTICAL MUSIC.

INSTRUCTIONS TO H.M. INSPECTORS.

The following circular has been issued to H.M. Inspectors :—

1. The whole object of this examination is to get pupil teachers to do individually what children in the schools are required to do for the highest grant for singing.

2. The tests to be applied are as follows :—

(*a*) One of five prepared songs to be sung.

(*b*) A passage of notes to be sung at sight.

(*c*) A rhythmic passage to be monotoned in proper time at sight.

(*d*) Groups of notes sung or played to be named by ear.

3. *Song Tests.*—The songs presented should be ordinary simple songs or tunes, such as can be easily performed from memory in any key convenient to the candidate, and without any accompaniment. Five songs should be prepared, and the examiner should select the one to be performed. The candidate should be prepared to submit copies of the music in case the examiner may need to verify the correctness of the performance of the song chosen. The points to observe are (*a*) the maintenance of pitch and good time; (*b*) the enunciation of the words; (*c*) the quality of tone and appropriateness of expression; and (*d*) the musical correctness of the performance.

4. Copies of note and time tests suggested for use of the candidate and examiner at this examination can be supplied on application. The examiner must not allow these tests to be taken away by the candidates.

5. *Note Tests.*—These should be sung to the sol-fa syllable from either the ordinary or the Tonic Sol-fa notation. The key chord should be well established before the candidate commences. Candidates should, as a rule, be encouraged to sing slowly.

6. *Time Tests*—These should be monotoned on some distinct syllable. The syllable *doh* is better than *lah* for this purpose. Credit should be given if the candidate can beat according to rule, but as many pupils find great difficulty in singing and beating simultaneously, it would not be expedient at present to insist upon the candidate beating time in this way. Beating time with the foot should be discouraged. Regularity and fluency are the points to be looked to.

7. *Ear Tests.*—It should be considered satisfactory if the easiest tests that can be given according to the requirements of each year are correctly answered. Readiness in answering tests not specially selected for simplicity can be expected from only about ten per cent. of the best taught pupils. It is important that candidates should not be discouraged from entering this examination because of fear of the ear exercises. Each test should be performed to the candidate two or three times, if necessary, and it should be considered satisfactory if two out of three tests are correctly answered.

8. As the application of every test (song, note, time, and ear) may occupy more time than can be given, it will suffice if each candidate is examined in time (the third year candidates in combined time and tune) and one other point. Full marks should be given if the tests submitted are readily performed or answered.

9. It will save time and generally facilitate the examination if three or four candidates are present together. Exactly the same tests of course should not be submitted to successive candidates.

10. Each candidate should have the option of singing from either notation. But candidates should not be permitted to sing the note tests from one notation and the time test from the other. The notation chosen for this examination need not be that chosen at the theoretical examination.

11. Male candidates whose voices are unsettled and practically unmanageable should be asked to work only time and ear tests.

FIRST YEAR.

1. Find the least common multiple of $\frac{3}{7}$, $\frac{7}{9}$, $\frac{9}{11}$. Ans. 315.

2. If to both the numerator and denominator of a fraction the same whole number be added what will be the effect? Give three distinct cases.

3. *Boys.*— $\frac{3\cdot\dot{5} - 1\cdot8\frac{1}{3}}{9\cdot\dot{7} - 6\cdot\dot{4}} \times \frac{1}{71} \div \frac{3\cdot1 \times \cdot10\dot{1}}{2\cdot\dot{1}\dot{5}} =$ Ans. ·05.

Girls.—If $(\frac{1}{2} + \frac{1}{3})$ of one cake $= (\frac{1}{3} + \frac{1}{4})$ of another cake, show that 10 of the former $= 7$ of the latter.

4. Write in large hand the words '*Gregory's Physiography.*'

Write in small hand the words '*He sinks into thy depths with bubbling groan.*'

5. Analyse the appended passage and parse the words in italics :—

'This *child* with piteous lamentation
Uptaken was, singing his song *alway;*
And with honour of great *procession*
They *carried* him unto the next abbey,
His mother *swooning* by the bier lay.

6. Give the plurals of *penny, formula, cherub, index, brother,* and *die.*

7. Describe any sunset, or storm that has impressed you.

8. Draw a map of Australia.

9. What are the *secondary* mountain ranges of Europe?

10. Enumerate the principal races, religions, and languages of Hindostan.

11. Mention the provinces and chief towns of Roman Britain.

12. Write short lives of Agricola and Pelagius.

13. What methods do you employ to teach spelling to Standard I.?

14. Write out the various kinds of rests, showing their relative values.

15. Decline *acer, acris, acre;* OR, How do French adjectives form the feminine gender?

PUPIL TEACHERS' ROUTINE FOR JANUARY, 1893.

DAYS	YEAR	FIRST WEEK.			SECOND WEEK.			THIRD WEEK.			FOURTH WEEK.		
		1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson	1st Lesson	2nd Lesson	3rd Lesson
MONDAY	1	Analysis and Parsing of Latin	How to teach Writing	Physical Geog. of Rivers	Analysis and Parsing of Latin	Vulgar Fractions of Wts. & Measrs. Bracketed Vulg. Fractions	Dates from 901 to 975 A.D.	Analysis and Parsing of Latin	How to teach Arithmetic	Reduc. of Vulg. to Decimals Comp. Practice	Composition or Paraphrasing of Latin	How to teach Spelling	Red. of Decimals to Vulgars. Simple Proportn
	2		How to teach Form	Latitude		Percentages, Simple Practice	Dates from 1327 to 1360 A.D.		How to teach Mental Arithmetic	Percentages, Compound Practice			Misc. Problems
	3			Winds		Compound Practice. Simple Proportion	Dynastic Tables		How to teach Colour	Stocks. Fractions of Money	How to teach Number		Square Root Fractions of Measures
TUESDAY	1	Euclid I. 5. Paper Patterns of Garments	Map of Irish Sea	Scripture or Revision	Euclid I. 6. Knitting Sock	Lives of Great Historic Personages	Scripture or Revision	Euclid I. 7. Stocking-hole mending	Physical Geography of Rivers	Scripture or Revision	Euclid I. 8. Paper Patterns of Garments	Subtr. of Algebra. Stocking-hole Mending	Scripture or Revision
	2	Euclid I. 7. 8. Paper Patterns of Garments	Map of Italy		Euclid I. 9. 10. 11 Knitting Stocking			Euclid I. 12. 13. Calico Patch	Longitude		Euclid I. 14. 15. Paper Patterns of Garments	G.C.M. of Algebra Flannel Patch	
	3	Euclid I. 37. 38. 39. Paper Patterns of Garments	Map of South Africa		Euclid I. 40. 41. Any Needlework			Euclid I. 42. 43. Hedge-tear Darn	Ocean Currents		Euclid I. 44. 45. Paper Patterns of Garments	Simple Equations. Hedge-tear Darn	
WEDNESDAY	1	History from 1012 to 1042 A.D.	Prefixes, Roots or Affixes of Latin	Reading Aloud	History from 1042 to 1056 A.D.	Any Geography	Literature, Repetition, and Writing	History of the 'Heptarchy'	Prefixes, Roots, or Affixes, of Latin	Reading Aloud	Dates from 795 to 1035 A.D.	Circulating Decimals. Bills of Parcels	Map of Ireland
	2	History from 1337 to 1376 A.D.			History from 1370 to 1399 A.D.	Latitude		History from 1410 to 1422 A.D.			Dates from 1399 to 1422 A.D.	Stocks. Vulgar Fractions of Weights	Map of Spanish Peninsula
	3	History from 1649 to 1660 A.D.			History from 1660 to 1678 A.D.	Ocean Currents		Battles of the Great Rebellion			Constitutional Struggles of the Stuart Period	Stocks. Simple Proportion	Map of Mediterranean Sea
THURSDAY	1	Geography of Scotland	Multip. of Algebra Paper Patterns of Garments	English from Text-book or Latin	Geography of Australia	History of Roman Period	Multiplication of Algebra. Knitting Sock	Geography of Australia	Metric System	Literature, Repetition, and Writing	Geography of Ireland	History from Egbert to Canute	Composition or Paraphrasing of Latin
	2	Geography of Europe	Division of Algebra Paper Patterns of Garments		Geography of India	History from 1399 to 1410 A.D.	Div. of Algebra. Knitting Stocking	Climates of British Empire			Productions of British Empire	History from 1422 to 1461 A.D.	
	3	Geography of Africa.	Algebraic Fractns. Paper Patterns of Garments		Geography of Asia	History from 1678 to 1685 A.D.	Square Root of Algebra. Any Needlework	Geography of Asia			Geography of Asia	History from 1685 to 1688 A.D.	
FRIDAY	1	Vulgar Frac. of Money, Measures, and Multiples	Examination		Vulgar Fractions of Measures. Any Add. or Sub. of Vulgar Fracns	Examination		Multip.of Decimals Easy Multip. of Vulgar Fractions	Examination		Examination		
	2	Proofs of Required Rules			Miscellaneous Problems			Stocks, Mixed Vulgars and Decimals					
	3	Miscel. Problems, Simple Proportion			Prst. Worth, Dict. Mixed Vulgars and Decimals			Stocks, Fractions of Weights					
SATURDAY	1	French or Latin	Physical Geography	Theory of Music	French or Latin	Science	Mensuration or Arithmetic	French or Latin	Freehand, Perspective, or Geometry	Vocal Music	French or Latin	Science	Mensuration or Arithmetic
	2		Freehand, Perspective, or Geometry			Freehand, Perspective, or Geometry			Physical Geography			Freehand, Perspective, or Geometry	
	3												

SECOND YEAR.

1. A and B can do a piece of work in 12 days. When C joins them they can do it in 9 days. In what time can C do it working alone? Ans. 36 days.

2. How can you easily discover whether a number will divide by 3, 4, 5, 6, 8, 9, 10 and 11?

3. *Boys.*—A person sells £5,000 three per cents., and buys three-and-a-half per cents. at 87½. If the increase in his income be £5, what is the price of the three per cents.? Ans. 77½.

Girls.—Find the greatest number which will divide 13956 and 14565 and leave in each case 7 remainder. Ans. 29.

4. As in First Year.

5. Paraphrase the following passage:—

The tidings spread, and *gathering grows* the crowd!
The hum of voices, and the *laughter loud*,
And woman's *gentler* anxious tone *is heard*—
Friends'—*husbands'*—lovers' *names* in each dear word.
Oh, are they *safe?* We ask not of success—
But shall we see them? Will their accents bless?
From where the battle roars—the billows chafe—
They *doubtless* boldly *did*—but *who* are safe?

6. Analyse the last six lines and parse the words in italics.

7. Select the prefixes from the following words, and give their original form and meaning:—*Accountable, subterranean, anticipate, counterfoil, enterprise, diffuse.*

8. Draw a map of the coast from Calais to Venice.

9. Where and what are *The Geysers, The Giant's Causeway, The Iron Gates, The Sunderbund, The Coromandel*, and *The Steppes?*

10. Compare the climate of London and St. Petersburg.

11. What were the so-called claims of Edward III. and Henry V. to the crown of France?

12. Write short lives of Simon de Mon fort and the Black Prince.

13. Write out Euclid I. 16. Enunciate its converse; OR,
What are the garments required to be shown to H.M.I. in each Standard?

14. Write out the future perfect of *habeo;* OR, past definite of *punir.*

15. Write notes of a lesson on notation up to one million.

16. What are the requirements of Standard III. in music? Write down a simple time test.

THIRD YEAR.

1. If either 5 oxen or 7 horses will eat up the grass of a field in 87 days, in what time will 2 oxen and 3 horses eat up the same?
Ans. 105 days.

2. Prove that the numerator and denominator of any Vulgar Fraction may be multiplied or divided by the same integer without altering its value.

3. *Boys.*—A square block of stone 1 foot thick contains 2 c. ft. 876 c. in. What is the length of its edge? Ans. 1 ft. 7 in.

Girls.—A bankrupt's debts amount to £2,000 and his property to £775. What will his creditors lose in the pound?
Ans. 12s. 3d.

4. As in First Year.

5. Analyse the following passage, and parse the words in italics—

England, with all thy faults, I love thee *still*—
My country! and *while yet* a nook *is left*,
Where English minds and manners *may be found*,
Shall be constrained to love thee. *Though* thy clime
Be fickle, and thy year most part *deformed*
With dripping rains, or *withered* by a frost—
I would not yet exchange thy sullen skies,
And fields without a flower, for *warmer* France
With all her vines.

6. Explain, with illustrations, the use of *apostrophe, hyperbole, irony*, and *metonymy.*

7. Select, and describe the force of, the affixes of the subjoined words:—*omnivorous, coalesce, baptism, ecstacy, patter, hark.*

8. Draw a map of South Africa.

9. What is meant by *counter currents, drift currents, water-spouts?* Classify winds.

10. Where are *The Pyramids, The Caves of Elephanta, The Country of the White Elephant, The Celestials, The Grand Llama, The Mikado*, and *Ostrich Farming?*

11. What sects were persecuted under Elizabeth's, James I.'s, Cromwell's, and Charles II.'s governments respectively?

12. Describe our struggle with the Dutch for naval and commercial supremacy.

13. Explain, as to Standard V., that if four quantities are proportionals, the first is to third as the second is to the fourth.

14. Demonstrate Euclid I. 47. Show that the equilateral triangle described upon the hypotenuse of any right-angled triangle is equal to the sum of the equilateral triangles described upon the sides.

Cut out the upper portion of a pair of drawers for a child aged ten.

15. Write out the commonest Impersonal (or Unimpersonal) Verbs in French OR Latin.

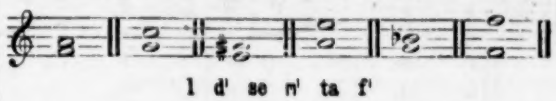
16. A hare is pursued by a greyhound, and is 60 of her own leaps ahead. The hare leaps half as fast again as the hound, but the latter's leap is ⅘ that of the hare. In how many leaps will the hound catch the hare? Ans. 72 leaps.

What are the chief requisites for efficient drainage of a house?

17. The side of a square is 100 feet. A point is taken inside the square such that it is 60 feet and 80 feet respectively from the two ends of a side. Find the areas of the four triangles formed by joining the point to the four corners of the square.
Ans. 2,400, 2,600, 1,800, 3,200 sq. feet.

Specify, giving particulars, the cost of an outfit for a girl of 14 going out as parlour-maid.

18. Name the intervals between each following pair of notes:—



l d' se m' ta f'
f s m l s f

(*For Correspondence see end of Scholarship Article.*)

Circular 319.

CIRCULAR TO H.M. INSPECTORS.

Pupil Teachers and Queen's Scholarship Examination.

EDUCATION DEPARTMENT,
Whitehall,
6th December, 1892.

SIR,—The number of Pupil Teachers who either defer their Queen's Scholarship Examination, or fail at their first attempt to pass it, is still so large that the Department propose to continue, till next July, the special concessions made in Circular 306.

But notwithstanding the concessions of that Circular, Pupil Teachers, whose engagements end on 30th April, 31st May, and 30th June, are at a disadvantage as compared with others, inasmuch as they have an interval of three months only between their third year's examination as Pupil Teachers in April and their Queen's Scholarship Examination, if undeferred. And even if the latter examination is deferred under the Memorandum of Agreement, this allows them not more than 15 months' preparation for the more difficult and important Examination, while those whose engagements end on 31st July, 31st August, or 30th September, have 15 months for preparation, if they do not defer their Queen's Scholarship Examination, and 27 months if they defer it.

To meet the case of the former class it is thought advisable, for the present, to offer such Pupil Teachers, instead of an extension of their engagements for a year under the Memorandum of Agreement, the alternative of a cancelling of their engagement, with the consent of all parties, and a re-admission for a new engagement to end on the 31st of July next following the date at which their engagements, if extended for a year under the Memorandum of Agreement, would end, *e.g.*, all Pupil Teachers whose original engagements ended on 30th April, 31st May, or 30th June, 1892, and whose extended engagements would therefore end on 30th April, 31st May, or 30th June, 1893, respectively, may be re-admitted for a term ending on 31st July, 1893.

The concession above described will in no case enable a Pupil Teacher to go in a third time for the Queen's Scholarship Examination in contravention of Article 48 (*d*) of the Code.

I have the honour to be,
Sir,
Your obedient Servant,
G. W. KEKEWICH.

THE GOOD OLD WAY.

Allegretto moderato.
mf
1. We are go - ing forth with our staff in hand, Thro' a des - ert wild in a strang - er land; But our
Key B♭. mf Allegretto moderato.
faith is bright, and our hope is strong, And the good old way is our pil - grim song.
f CHORUS.
Oh, the good old way by our fa - thers trod, 'Tis the way of life and it leads to God; 'Tis the
on - ly path to the realms of day— We are go - ing home in the good old way!

2. There are foes without, there are foes within,
They would turn us back to the path of sin;
We will stop our ears to the words they say,
While we onward press in the good old way.
Oh, the good old way, &c.

3. On the brink of time when we stand at last,
When our sun has set and our work is past,
When we bid farewell to our mortal clay,
We will praise the Lord for the good old way!
Oh, the good old way, &c.

THE 1893 SCHOLARSHIP EXAMINATION.

BY DR. GEORGE BEACH, M.A.,

Co-Author of 'A Manual of our Mother Tongue,' 'A Girls' Arithmetic,' Author of 'Elements of English,' 'Entertaining Readers,' etc.

1. IN our list of DAY TRAINING COLLEGES, published last month, that at Oxford was not inserted because it was not in the Department's list kindly furnished to us. It has now, however, been recognised by the Education Department, and we willingly call attention to it, for, as one of its officials writing to us says: 'We readily see how important a step towards linking the Universities and our Elementary Schools, the establishment of a Training College at Oxford is.' With most cordial wishes that this institution may be a firm rung in the educational ladder we pass on.

2. DOMESTIC ECONOMY (continued from p. 316).

Summary of Questions given in last twenty years.

SECTION V. (*a*) *Clothing.*—

Difference between linen and cotton; use of clothing; comparative advantages and drawbacks of linen, cotton, silk, wool; clothing for head, body, feet; vicious fashions in clothing; origin, preparation, use and selection of clothing materials; care of clothing; suitable clothing for teachers; clothing for various climates; quantity required and cost of materials for ordinary garments; outfits for servants and pupils teachers; removal of grease, ink spots and stains.

(*b*) *Washing.*—

Order and method of a weekly washing in a poor man's house; preparation for washing-day; a schoolmistress' washing-day; special washing of blankets, prints, woollens, linens, muslins. What articles must be washed without soap or without soda? What articles must not be starched, mangled, or long-dried? Uses of soap, soda, petroleum, gall, and borax. Composition of soap? Getting-up of linen; advantages or otherwise of a washing machine; appliances for washing. What articles must be washed by hand? Temperature of water required for the various washing processes.

Our Lady Readers should carefully go through all the above particulars (and also those previously given) checking and testing their knowledge. What portions they cannot answer should be studied in due course; and this being done, we can promise with absolute certainly, that the Domestic Economy Paper will present no terrors. Doubtless many candidates are already accomplished 'housewives,' and these will be delighted to find how great is the proportion of questions, which can be answered from their own experience.

The arrangements in our routines afford all the time that book-work and theory demand.

3. HANDWRITING.—

Upon the rock of bad handwriting many candidates are either totally wrecked or are stranded through obtaining a low position on the list. Some twenty years ago the utterly inane idea prevailed, that bad writing was a mark of intellectual power, and, strange to say, from some out-of-the-way minds this error is not yet completely uprooted.

We will examine the subject under three heads:—

I. *The Art of Writing.*
II. *The Science of Writing.*
III. *The Art of Teaching Writing.*

I. *The Art of Writing* has certainly not advanced since the Dark Ages. We see no longer caligraphy (=beautiful writing) as artistic as that of the Dark Ages, and this for at least five reasons:—

(*a*) The utilitarian fiend has driven away the angel of beauty, and as long as writing is suitable for business purposes, nothing more is now required.

(*b*) The hurry and bustle of life demands speed in writing. Good and rapid writers are more scarce than is perhaps imagined. Nearly every prolific writer is perforce a bad penman.

(*c*) The invention of printing and its marvellous advance in ornamental design has rendered it impossible, except in rare instances, for the caligraphist to gain even a mere pittance.

(*d*) The pious spirit of labour, which induced the mediæval monk in some monastic scriptorium to linger lovingly for the glory of God over the creation of the charming uncials and capitals of illuminated missals, nowadays has migrated to inspire missionary and philanthropic effort.

(*e*) The steel pen has displaced the more facile quill.

In order to write well, we must (*a*) be artistic, (*b*) eschew hurry, (*c*) love beautiful forms, (*d*) use the best materials, (*e*) adopt a proper attitude of body, (*f*) and must hold the pen properly.

Hughes's Art of Handwriting and Hughes's Scholarship Copybook, price one shilling each, will well repay purchasing.

II. *The Science of Writing.* Page 72 of the 'Art of Handwriting' should be carefully mastered; also *Gladman*, pp. 59 to 71; and it is profitable to study the arrangement and graduation of any excellent series of copybooks.

Attack LARGE HAND first, omitting the capitals. Analyse the letters into their various elements; minutely examine the structure of these, note their relative width and length, and become acquainted with the degrees of difficulty experienced in forming them. The Education Department issues the following remarks:—

'*Large hand in the Code may be taken, as a general rule, to mean writing in which the lines (between which it is written) are not less than three-eighths of an inch apart. Providing, however, that the writing is bold and legible, and the proper forms and proportions of the letters are duly observed, my Lords do not desire to prescribe a uniform rule, either as to its exact style or size.*'

Candidates are also directed '*not to* PAINT *their letters in the copy-setting exercise, but to take care that the copy is clean and without erasure.*'

The body of SMALL HAND letters is only one-third the size of that of Large hand, but the long loops or strokes should be carried three-sixteenths of an inch above or below the lines.

The medium lengths of *p* and *t* should, however, be duly observed.

The Large-hand grouping and analysis of letters will *prima facie* suffice also for the Small hand.

The Department is not unduly exigent, but merely demands that '*Small hand shall be running, free and symmetrical, as well as legible and clear.*'

Being interpreted, the above edict simply means that three qualities are requisite, *viz.*, facility of execution, facility of reading, and agreement with the conventional requirements of form. We say '*conventional*' because every European nation has, as regards writing, a fashion of standard excellence all its own.

Very frequently we are asked questions respecting '*Upright*' and '*Civil Service*' style of Handwriting. The former is, we believe, merely a craze, which we have previously treated of in the Certificate Articles, the latter can, without hesitation, be unreservedly commended. As regards upright writing, we have in the course of our career seen it, like many Parisian fashions, come in and go out again with commendable promptitude.

TEXT HAND is only occasionally required. One-quarter of an inch is the standard length for the body of the letter, and half an inch for the long strokes, the medium strokes of *p* and *t* being again excepted.

Whether we consider Large hand, Text hand, or Small hand there should not be anything relatively small. An error on the side of excessive magnitude will not involve penal consequences, but on the side of smallness will be mulcted of marks.

SMALLNESS OF WRITING MUST BE CAREFULLY GUARDED AGAINST, because many pupils are tempted to give prolix answers, instead of scientifically condensing, and in order to compensate themselves, the space being limited, they then write microscopically.

This finesse will not, however, avail. The patient examiner, who has to mark *x* papers a day, and finds he has extra work to do, must inevitably 'come down' upon '*Le scribe petit*' with disastrous consequences.

Hear again what 'my lords' say: '*Writing as taught in schools is apt to be too small and indistinct. Pupils should be taught to write a firm, round, legible hand.*'

III. THE ART OF TEACHING HANDWRITING.

It is unnecessary, in the presence of so many School-management manuals, to do more than summarise. Certainly, a good practical penman is more likely to produce good writers than the bald theorist who merely scribbles or scrawls, even if he do this never so learnedly.

The following rules may, nevertheless, be of service:—

(*a*) See that an idea of the elements, forms, and sizes of letters is acquired by slate practice.

(*b*) Never, throughout the pupil's school life, entirely omit blackboard demonstration.

(*c*) Begin writing on paper as soon as possible. We know many denominational schools where, to save expense, copy-books and exercise-books are only used during the quarter before the annual inspection.

(*d*) Don't advance the pupil too fast, and be in no hurry to leave large hand and double lines.

(*e*) Don't allow too much tracing.

(*f*) Let the writing lessons be short, but most minutely supervised.

(*g*) Stick to one style of writing and one series of copy-books, but do not repress individuality.

(*h*) Insist upon all the writing being of a painstaking character, whether in exercise or copy-book.

(*i*) Don't set lines to write as a punishment.

(*j*) See that the pupils imitate the copy and not their own handwriting, and to further this

(*k*) Write often yourselves in the scholars' copy-books.

(*l*) Occasionally set copies on blackboard to be written in exercise books.

(*m*) Give much practice in capital letters and figures.

The marks given for writing are awarded upon—

(*a*) The copy-setting,
(*b*) The dictation exercise, and
(*c*) The handwriting and figures of all the papers supplied to the penmanship examiner.

Before writing the examination copy, it is well to practise it once or twice upon the scrap paper, and thus to become accustomed to the large hand and the 'swing' of the particular copy.

In ordinary practice pay particular attention to such combinations as *gl*, where one stroke goes from bottom of *g* to top of *l*.

IV. DICTATION.—

This exercise contains on an average one hundred and fifty words, which are dictated about eight or nine per minute. The passages vary greatly in difficulty; but as a rule contain no unusual or technical words. Favourite traps are baited with words ending in *-eive*, *-ieve*, *-ant*, *-ent*; *-ance*, *-ence*; *-ize*, *-ise*; *-able*, *-ible*; *-ure*, *-eur*; *-ent*, *-ence*; *-ant*, *-ance*; *-us*, *-ous*; *-or*, *-our*; *-ate*, *-ite*; *-m*, *-mn*; the terminations *-ue*, *-ique*, *-esque*, *-esce*, and words where the variant spelling differentiates the meaning of identical sounds. The excerpt must be properly punctuated; there must be no writing between lines, no division of words between two consecutive lines, and no abbreviations, as plenty of space is allowed. Omissions, erasures, and Americanisms are counted as mistakes.

V. ENGLISH.—

Until recently the study of Modern Languages had no part in a liberal education. However much they may have been appreciated for their practical use, their educational value was absolutely unrecognised. This neglect was carried to its fullest length in England as regards our own 'Mother Tongue.' Further, the study of English, and the capacity of our language, were positively contemned, and an educated man able to translate Milton into pure Latin hexameters would have been ashamed to acknowledge a critical acquaintance with the speech of his native land. Ignoring the Teutonic basis of English, he was quite satisfied with that knowledge of it which the comparative Grammar of Latin and Greek afforded him; and thus entirely failed to become saturated with the genius of Anglo-Saxon.

To this neglect it is owing that for many years no sound treatise upon the English Language was in existence, and even now, in a few out-of-the-way Elementary Schools, and in many reputable Grammar schools, obsolete manuals survive.

It cannot be said that Scholarship English is difficult, but yet it is comprehensive, and covers a fairly wide area, even if it be not profound in its requirements.

What these requirements are it would be here waste of time to insert, as they can be found in the four years' syllabus of the Pupil Teacher Course, and their interpretation and the style of question propounded upon them can be well studied from the large number of Departmental queries which we give, and even more from the Model Answers which we periodically insert.

We believe our Scholarship Readers will be very materially assisted by carefully examining those answers which are embodied in the Pupil Teachers' Course for this month.

No space remains to us further than to suggest that

(*a*) The voice of Verbs should be carefully studied :—

(*b*) The Irregular Verbs require much attention, especially such as *fly* and *lie*, which have more than one meaning :—

(*c*) In Parsing, the degree of the Adverb, the double power of the Connective Adverb, the number of the Demonstrative Adjectives, the qualifying by Participles, and the quotation of syntactical rules employed should not be omitted :—

(*d*) Participles should not be expanded into Adjective sentences, *e.g.*, 'The man *condemned* to death effected his escape' must not be parsed as 'The man [who was] condemned,' etc.

SELECTED SCHOLARSHIP QUESTIONS.

WEEK ENDING 14TH JANUARY, 1893.

1. What do you mean by the 'Comparison of Adjectives'? When ought the comparative and when the superlative form to be used? What classes of adjectives do not admit of comparison?

2. In what manner does a relative pronoun resemble a conjunction? How would you distinguish one from the other?

3. Describe the situation of Perth, Londonderry, Cork, Cardiff, Boston, Stranraer, and Longton.

4. What do you know of the origin of the names, *Chester, Edinburgh, Philadelphia, Washington, St. Petersburg?*

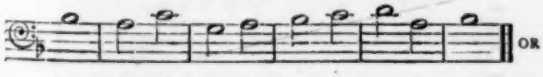
5. Give, with dates, the chief events in the reign of Henry VII.

6. What were the chief causes of enmity (*a*) between England and Spain in the time of Elizabeth; (*b*) between England and France in the reign of William III.?

7. In what way may success in Class Teaching be promoted by studying the characters of the children?

8. Explain the best way of arranging a class for a Reading Lesson; and show how far in conducting such a lesson you will make use (*a*) of *simultaneous reading*, and (*b*) of *pattern reading*.

9. Write the following the same pitch on the treble stave :—



What is the difference between *G-two* and *two-G?* Which Doh ought to have the octave mark?

10. A fruiterer has 889 Spanish and 1,397 Maltese oranges. He put them into boxes, keeping the two kinds of oranges separate, and placing the same number in each box. If the number in each box is the greatest possible, find it. Ans. 127.

11. What is the principal which will yield £14 2s. 6d. interest in 219 days at 4 per cent.? Ans. £588 10s. 10d.

12. What would be the cost of building a room 38 ft. long, 32 ft. wide, 37½ ft. high, at the rate of 13s. 6d. per yard of cubic contents? Ans. £1,140.

13. (*Men only.*) Write out Euclid I. 41.

Find a point O inside a triangle ABC, so that the triangles OAB, OBC, OCA are equal.

(*Women only.*) On what grounds are the French said to be far in advance of us in regard to the economical preparation of food?

14. (*Men only.*) Write out Euclid II. 11.

Produce a straight line so that the rectangle contained by the whole line thus produced, and the part produced, may be equal to the square on the original line.

(*Women only.*) State the amount of material required, and the kind of material best suited, for making a shirt for a boy of twelve, and give accurate measurements of its different parts.

15. (*Men only.*) One side of a triangle is 15 ft. It is required to divide the triangle into five equal parts by straight lines parallel to one of the other sides. Find the distances (to four places of decimals) from the vertex of the points of division of the given side.

Ans. 6·7082 ; 9·4868 ; 11·6190 ; 13·4164 ft.

(*Women only.*) Give an account of the price, material, colour, and making-up of a neat dress for your own summer wear in school, and say how it should be washed and worn, so as to last as long as possible.

16. (*Men only.*) (*a*) Write down the factors of $x^2 + 3x - 10$; $x^4 - 1$; $9x^2 + 15x - 14$.

Ans. $(x + 5)(x - 2)$; $(x - 1)(x + 1)(x^2 - x + 1)(x^2 + x + 1)$; $(3x - 2)(3x + 7)$.

(*b*) Extract the square root of $a^2b^2 - 4a^2bc + 4a^2c^2 + 9b^2c^2 + 6ab^2c - 12abc^2$. Ans. $ab - 2ac + 3bc$.

17. (*Men only.*)
$$\left.\begin{aligned} \frac{3x+2}{5} &= \frac{5y-11}{4} + 1 \\ \frac{3x}{2} + \frac{5y}{4} &= 25\tfrac{1}{4} \end{aligned}\right\} \text{ Ans. } x = 11,\ y = 7.$$

WEEK ENDING 21st JANUARY, 1893.

1. Write a short essay on the Census.

2. Say what you know of any two of these writers :—*Bacon, Johnson, Pope, Macaulay*, and what books they wrote.

3. Give a description and explain the importance of *Gibraltar, Aden, Hong Kong, Dover*.

4. Draw a map of *Ireland*.

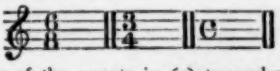
5. What important consequences followed upon the battles of the Nile and Quebec? Name some of the chief differences between the weapons of war employed in these battles and in modern warfare.

6. Give dates of :—The landing of the Pilgrim Fathers; The founding of Pennsylvania; The defeat of the Armada; The capture of Gibraltar; The capture of Quebec; The battle of Plassey; The battle of Blenheim; The founding and abolition of the East India Company; The passing and the repeal of the Navigation Acts.

7. Name some of the commonest faults of young assistants in teaching *spelling*. How much of a spelling exercise should be oral, and how much should be written?

8. In preparing a lesson upon a comparison between the present condition of Great Britain and that of France, Germany, or the United States, state what classes of facts you would wish to procure, and in what books you would seek them. Give an example of a sketch which would exhibit your facts in tabular form on the blackboard.

9. Write two measures or bars each in the kind of time indicated by the following signatures :—



Give examples of the accents in (*a*) two-pulse measure, and (*b*) three-pulse measure, both in the primary and secondary forms.

10. Give Notes of a Lesson on *Long Division*.

11. Find the discount on £160 10s. due two years hence at 3½ per cent., Simple Interest.

SCHOLARSHIP OR FOURTH YEAR ROUTINE FOR JANUARY, 1893. (MEN AND WOMEN.)

DAYS	FIRST WEEK.	SECOND WEEK.			THIRD WEEK.			FOURTH WEEK.		
		I.	II.	III.	I.	II.	III.	I.	II.	III.
MONDAY		Simple Equations. Miscellaneous Geography	Dates from 1787 to 1819	Latin, *or* French Grammar	Algebra up to Simple Equations. Questions on Needlework	History from 1819 to 1830	Chapters 35 to 40 of 'De Bello Gallico,' *or* 'La Jeune Sibérienne,' pp. 50 to 60.	Algebraic Fractions. Ingredients of Food	Dates from 1819 to 1848	Latin, *or* French Grammar
TUESDAY		Props. 5, 6, and 7 of Euclid, Book II. Diagram of Night Shirt	Revise Geography of Ireland	Science, *or* Revision	Props. 9, 10, and 11 of Euclid, Book II. Cut out a Paper Pattern of a Pair of Child's Drawers	Repetition and Literature	Science, *or* Revision of Europe	Props. 12, 13, and 14 of Euclid, Book II. Cut out a Paper Pattern of a Child's Frock Bodice	Revise Geography of Hindostan	Science, *or* Revision
WEDNESDAY		Exchange	Latin Prefixes and Affixes	Drawing, *or* Revision	Clock Sums	History of English Language	Drawing, *or* Revision	Proofs of Rules in Arithmetic	Paraphrasing and Penmanship	Drawing, *or* Revision
THURSDAY	HOLIDAY.	Simple Equations. Miscellaneous Geography	England under the Plantagenets	Chapters 30 to 35 of 'De Bello Gallico,' *or* 'La Jeune Sibérienne,' pp. 40 to 50	Algebraic Factors, Savings and Investments	History from 1836 to 1848	Latin, *or* French Grammar	Fractional Simple Equations. Preparation of Food	England under the Plantagenets	Revise 'De Bello Gallico,' *or* 'La Jeune Sibérienne'
FRIDAY		Deductions on Euclid, Book II. Any Needlework	The Seasons	Latin Roots	Revise Props. 6 to 32 of Euclid, Book I. Calico Sampler	General Geography of North America	How to teach Arithmetic to Standard III.	Deductions of Euclid, Book I. Flannel Sampler	Map of Australia	Notes of a Spelling Lesson to Standard IV.
SATURDAY		Mensuration of Triangles. Square Root	Paraphrasing and Dictation	Examination	Problems of Motion	Parsing and Analysis	Examination	Mensuration of the Circle. Proofs of Arithmetical Rules	Study English Syntax from Text Book.	Examination

12. Two gallons of a mixture of spirit and water contain 12 per cent. of water, and are added to three gallons of another mixture containing 7 per cent. of water; to the whole is then added half a gallon of water. Find the percentage of water in the resulting mixture. Ans. $17\frac{3}{11}$ per cent.

13. (*Men only.*) Write out Euclid I. 44.

Divide a straight line AB at C, so that the square on AB may be twice the square on BC.

(*Women only.*) Calico, flannel, and linen are extensively used in underclothing. Give some brief account of the way in which these materials are produced. What considerations should guide you in selecting flannel for an infant's garments, and for men's shirts?

14. (*Men only.*) Write out Euclid II. 12, and II. 13.

(*Women only.*) What kind of a covering, in a damp, cold, climate, would you recommend for head, body, and feet? Give your reasons.

15. (*Men only.*) Find the side of a regular hexagon which shall be equal in area to an equilateral triangle of 150 feet side.

Ans. 61·237 ft.

(*Women only.*) Name the best ways known to you for making use of scraps and remnants of bread.

16. (*Men only.*)

Prove that $\frac{a}{b} \div \frac{c}{d} = \frac{ad}{bc}$ where the letters denote any numbers.

17. (*Men only.*) Simplify

$$\left\{\frac{a + \frac{b^2}{a}}{a + b} - \frac{a - b}{a - \frac{b^2}{a}}\right\} \div \frac{1 - \frac{a}{b}}{1 - \frac{a^2}{b^2}}.$$

Ans. $\frac{b}{a}$.

WEEK ENDING 28TH JANUARY, 1893.

1. Paraphrase this passage :—

'*What passion cannot* music raise and *quell?*
When Jubal *struck* the chorded shell
His listening brethren *stood around,*
And, *wondering,* on their faces *fell*
To worship that celestial sound.
Less than a *God* they thought *there* could not *dwell*
Within the hollow of *that* shell
That spoke so sweetly and so *well.*

Parse the words in italics.

2. Explain the meaning and the grammar of the word *but* in each of the following sentences :—

(*a*) There is no man here *but* honours you.
(*b*) *But* yesterday the word of Cæsar might
Have stood against the world.
(*c*) He came, *but* did not remain long.
(*d*) Life has passed
With me *but* roughly since I saw thee last.
(*e*) No tongue *but* Hubert's.

3. What is meant by climate? What are the chief causes affecting it? Describe the influences upon it of each of these causes.

4. What information would you give in a lesson on '*The lakes and rivers of British North America?*'

5. What do you know about the relations between the Sovereign and the Parliament in the reign of Henry VIII. and between 1600-1630? Mention Acts of Parliament or historical incidents which show what were the matters in dispute.

6. Enumerate briefly the chief historical events connected with the Tower of London, OR, Holyrood House, and give a brief account of one of them.

7. Give a short list of the different kinds of books which you would expect ordinary boys and girls to be able to read by themselves immediately after quitting the day-school, say at the age of thirteen. Mention some good books which you think are rather too difficult for such children.

8. Write notes of a lesson on *one* of these subjects: (*a*) *Cardinal Wolsey,* (*b*) *Interest of Money,* (*c*) *Sugar* (Infants).

9. Between what notes of the major scale is the tritone found? What is the position of the semi-tones in the descending minor scale?

10. (*a*) Divide ·4214412 by ·002103. Ans. 200·4.

(*b*) Divide $5{\cdot}5\dot{4}$ by $3{\cdot}3\dot{8}$. Ans. $1{\cdot}6\dot{3}$.

11. A and B can reap a field in 10 days; A and C in 12 days; B and C in 15 days. They all work together for 4 days, when A leaves. B and C work together for 6 days more, when B leaves. In how many days will C be able to finish the work? Ans. 4 days.

12. Find three numbers which are to one another as 1 : 2 : 3, and such that the sum of their cubes is 4,500. Ans 5, 10, 15

13. (*Men only.*) Write out Euclid I. 48. Enunciate its converse.

(*Women only.*) Describe very fully the process of making beef-tea, giving three recipes.

14. (*Men only.*) Write out Euclid II. 14.

Describe a right-angled isosceles triangle equal in area to a given rectilineal figure.

(*Women only.*) Give the names of six of the most important cooking utensils for a poor man's family, and describe their use.

15. (*Men only.*) Find the side of a regular nonagon which shall be equal in area to an isosceles triangle whose vertical angle is 40° and whose base is 177 feet long. Ans. 59 feet.

(*Women only.*) Explain how time may be economised in teaching needlework by the use of the blackboard and other class apparatus.

16. (*Men only.*) A farmer holds two farms, for each of which he pays a rent of 32s. an acre, the total rent being £432. The value of the land falling, the rent of the smaller farm was reduced 2s., and of the larger farm 7s. per acre, and his total rent thus fell £64 10s. What was the number of acres in each farm?

Ans. 120 acres; 150 acres.

17. (*Men only.*) Solve the equations :—

(*a*) $\frac{9}{x+1} - \frac{3(x-1)}{x-2} + \frac{3x}{x+2} = 0$. Ans. $x = -10$.

(*b*)
$$\left.\begin{aligned} x + \tfrac{y}{11} &= 71 \\ y - \tfrac{x}{13} &= 61 \end{aligned}\right\}$$
Ans. $x = 65$; $y = 66$.

(*c*) $x - \frac{5}{2} + \frac{1}{x - \frac{3}{4}} = x - 1 + \frac{1}{x-1}$.

Ans. $x = \frac{1}{2}$ or 3.

CORRESPONDENCE.

We shall be pleased to reply briefly and through these columns to any SUBSCRIBER *seeking examinational information and advice and* ENCLOSING THE NECESSARY COUPON.

This privilege does not, of course, extend to furnishing the solutions and answers of problems. All such communications should be addressed to 'THE QUERY EDITOR.'

Replies demanding urgency will be promptly forwarded per post on receipt of a stamped and addressed envelope, ACCOMPANIED BY THE REQUISITE COUPON.

A post will be saved by writing direct to DR. GEORGE BEACH, M.A. (*Examination Editor of* '*Practical Teacher*'), STANLEY MOUNT, MACCLESFIELD.

ANSWERED BY ORDINARY POST :—

E. D. (Venterdon); W. S. (Stevenage); G. W. (Newcastle-on-Tyne); R. T. (Mumbles) Two letters; W. A. W. (Harriseahead); R. C. M. (Queenspark); F. E. (Ripon); S. S. H. (Chester); A. L. (Bloxworth); G. N. A. (Longeaton); M. Y. (Madeley); A. G. (Stornoway); W. (Longton); A. E. N. (Cowes); F. O. (Wells); W. H. E. (Chillington); L. P. (South Shields) R. F. G. (Great Ayten); E. N. (Harrogate); S. and A. B. (Blackburn); H. B (Lincoln); H. P. (Walworth); A. H. (Winkhill); J. W. D. (Easingwold); A. L. S. (Ryde) Three letters; A. S. (Birkenhead); E. A. A. (Holmfirth); F. A. T. (Dublin); C. M. (Pontellgufraith); A. W. (Hillmorton); MERCATOR (Riddlesden); R. A. (Cheste); F. E. R. (Wickham Market); J. G. (Arbroath); READER (Brierley Hill).

W. M. (Coatbridge, N.B.).—We are very sorry, but most of our January Part was already in type when your letter reached us.

M. H. C. (Helensberg, N.B.).—Many thanks for your kind expressions.

J. W. H. (Oxford).—You will see that we have *de facto* given you a good advertisement in return for last month's unavoidable omission.

H. O. (Wolverhampton).—If any school has been closed by the Medical Authority, the number of openings lost can be deducted from the 400.

M.D. (Longton) kindly forwards the correct answer to Scholarship sum 10 (*Women*) of first column p. 319. This is 1 instead of $\frac{7}{11}$.

E. D. (Stoke Climsland, Cornwall); T. M. P. (Stoke).

CYMRO (Moelfre), $\frac{3}{4} \div \frac{1}{2} \div 1\frac{1}{8} = (\frac{3}{4} \div \frac{1}{2}) \div 1\frac{1}{8}$.

W. J. A. M. (Coatbridge) 'De Belle Gallico.' Book I.

NOTICE.—The Certificate Course, including Model Answers, Hourly Routines, Test Questions, etc., will commence next month (February).

EDUCATION ABROAD.

THE QUESTION OF SUPPLEMENTARY LESSONS is discussed from several points of view in the *Man. Gén. de l'Instr. Prim.* M. Dessez, Academy Inspector at Agen, says: 'We have seen, in the course of a tour of inspection, a teacher and his assistant taking it upon themselves to superintend their pupils up to 6 p.m., watching over their work, and giving supplementary lessons to the backward ones, or those preparing for examinations. And this was done gratuitously, simply from love of the work. We have been told that such devotion is not rare in teachers, which we gladly believe now that we know them better. But, however frequent, it is none the less admirable, and we are happy to mention it, since it is well that the general public should appreciate at their full value the efforts of our teachers.' Something very different we find from M. Brunel, Director of Primary Instruction: 'The spirit of pedagogy has got the better of routine, and the majority of teachers impart instruction to their pupils, whatever its kind, so as to give them substantial and wholesome mental food, without excess. Without excess! The expression is perhaps too absolute. The danger lies in over-feeding. I do not mean that which consists in forcing an undigested mass of material upon the brain of the child. No; it is overwork due to the ambition and excessive zeal of the master, and to accumulated work on the part of the pupil. I have combated this evil by summarily prohibiting those supplementary lessons which, taking up the child at six o'clock in the morning, conducted him until bed-time through the monotonous and enervating routine of exercises, mechanically repeated a hundred times, leaving him no rest of body or mind, crushing all individual capacity, reflective power, and indeed all life and soul, under the brutal hammer of spelling, sums, and other educational instruments of torture. Six hours of class work and one or two hours of study per day during four or five years should suffice to prepare a child for the *certificat d'études*, without the necessity of resorting to high pressure. All teachers ought to comprehend this for their pupils' good and their own.' These two opinions are commented upon as follows:—'There is evidently no unanimous opinion among the *Inspecteurs d'Académie* as to so-called supplementary lessons. We are ready to admire, with M. Dessez, the devotion of the teachers whose merits he proclaims; and yet, we must ask ourselves whether this devotion is as enlightened and fruitful as it is generous, and we are a little doubtful about that. We cannot agree with M. Brunel as to the sole effect of these lessons so graphically described by him. School exercises do not become a torment in the hands of teachers who know their business and have a love for children. But we entirely share the opinion of M. Brunel when he says that six hours of class-work and one hour—we will not say two—of study per day for four or five years should suffice for the *certificat d'études*. This modest certificate ought, in fact, to be the natural outcome of primary studies pursued in the regular course, and not the product of 'high pressure.' In short, admire, if you will, the teachers who look after pupils till six o'clock in the evening to give them extra lessons, but don't imitate them.'

TUNIS.—The progress of French ascendancy in Tunis since the Occupation of 1881 is illustrated by the advance in education, which has been more or less Gallicised. At the present time, when the hereditary power of the Bey is merely nominal, and practically vested in the French Resident-General, a Director of Public Instruction is charged with all matters concerning public education in Tunis. He is *ex-officio* president of all examining boards, and signs the diplomas awarded to the candidates. At least once a year he visits all the different educational establishments. In 1885, the educational budget amounted to 120,000 frs.; in 1889, to 435,000 frs.; and in 1890, to 530,000 frs. Taking into account, also, the municipal contributions and the funds provided by the Sadiki College, the total spent on education amounts to 727,902 frs. In 1883, at the time when the Board of Public Instruction was constituted, the establishments in which instruction was given in French numbered twenty-four, two of which were colleges. Twenty of these were under clerical direction; the others—the Sadiki College and the three schools of the Israelite Alliance—under lay management. In 1890 we find eighty-three such establishments. Four of these are for secondary education. The Saint Charles College was founded in 1888 by Cardinal Lavigerie, and converted in 1889 into a Lycée on the Paris model. Sadiki College was founded in 1876. One hundred and fifty Mohammedan students are annually admitted to this college by open competition. The subjects are classical and administrative. They are taught by French and Mohammedan masters, and many of the students finish their studies in France. The third of the high schools, Alaoui College, was founded in 1884 at Tunis, at the Bey's initiative. It serves the purposes of a training college. The teachers in training have to pledge themselves to a ten years' career as a teacher. The majority of French masters, on arriving in Tunis, go for a few months to Alaoui College to learn Arabic. There is also a higher school for girls. A fusion of the French and the Moslem element in the two principal colleges has lately been attempted by admitting fifty-four pupils of Sadiki College to the Lycée Saint Charles. The innovation has been crowned with almost complete success. There are also evening classes for adults at Tunis, Bizerte, Sousse, Kairouan, and Sfax. The scholastic population numbered 4,390 in 1885, 8,702 in 1889, and 10,749 in 1890. Out of 221 teachers in elementary schools, 130 were masters and twenty-eight mistresses in schools under lay management, and thirty masters and thirty-three mistresses in clerical schools. The number of natives learning French amounted to 150 in 1883, and increased to 474 in 1885, 1,765 in 1889, and 2,579 in 1890.

THE PRATT INSTITUTE, of Brooklyn, N.Y., which was founded by Mr. Charles Pratt in 1887, has brought out the first number of its 'Monthly.' This gives a good account of the working of the establishment. It consists of ten departments. In the Technical High School there are sixty freshmen—forty-two junior and eighteen senior students. The school elects its own president, with all the machinery of a Federal election. The students are divided into classes representing States, and a chosen staff of editors and reporters bring out the Institute's *Daily News*. The department of Industrial and Fine Arts comprises classes in figure-drawing and clay-modelling in black and white, and in oil painting; in architectural and other designs, and in art needlework. There is also a normal class for teachers. Millinery, dressmaking, and cooking are taught in the department of domestic art and science, where casts of classical statues, good materials in soft colours and tones, and models of tasteful adornment serve to educate the eye and taste of the pupils. The department of science and technology provides the philosophy and practice of handicrafts, and a normal school of music trains teachers and manages a successful choral society. A Froebel academy and a free kindergarten offer opportunities for educational practice, while the library not only supplies books, but trains a class of practical librarians.

NEW SOUTH WALES TEACHERS' ASSOCIATION.—On the evening of Tuesday, 6th September, a public meeting, to inaugurate the formation of the Teachers' Association of New South Wales, was held in the hall of the Young Men's Christian Association, Pitt Street, Sydney. There was a large attendance. The president of the Association, Mr. A. B. Weigall, occupied the chair, and there were also present upon the platform, besides several members of the Council, Sir Henry Parkes, G.C.M.G., and Mr. James Inglis, M.L.A. Printed information concerning the Association was handed to visitors. On the papers in question, the object of the organisation was specified as under:—To further the cause of education (*a*) by drawing teachers together as a profession; (*b*) by discussion; (*c*) by communication with other like associations; (*d*) by other methods approved of by the Association.

The president opened the proceedings by delivering an inaugural address. The Association had been formed to provide a machinery for the union of all persons engaged in teaching in this colony. It owed its inception to the spontaneous action of some assistant masters, and would thus seem to be the natural expression of a real want, and not the artificial creation of a want that did not exist. This fact of itself seemed to him the best augury for its future vitality and usefulness, and it was to be hoped that, as the assistant masters had been mainly instrumental in forming the Association, they would always be fully represented upon its council and in its various executive offices. The object of the Association was, as he had said, union; but it was not unionism. All teachers were invited to join the Association, but such advantages as might be secured through its agency would be shared by all teachers, whether they joined or not. They might, amidst disappointments and apparent failure, console themselves with the assurance that good work was never wholly lost, but they must not hope that their work, however wisely devised, however faithfully carried out, could prove an ultimate or a final solution of the problem. (Applause.)

Sir Henry Parkes, on being called upon by the chairman, said he was present at the invitation of a number of gentlemen, who, he believed, represented the Association. He understood that one of the objects of the teachers in forming the Association was to meet and consider how best to cultivate the work in which they were engaged. He did not, of course, feel the same kind of technical interest in the subject of education as those ladies and gentlemen around him necessarily felt; but what he did feel was more of a political interest, in so far as education would strengthen and instruct the minds of those who were to occupy Australia in the future. He would always be in favour of giving the profession in this country a place second hardly to any other class of persons.

(Applause.) In conclusion, the speaker referred to the advantages to be derived from the growth in the enlightenment of the people, and said that, for this issue, the teaching given must be largely depended upon.

Mr. Inglis, who emphasised the importance of the profession, also stated that the idea of parental authority seemed to be vanishing into thin air, and that an undue amount of reliance was placed by parents on what would be done for the children under the educational system.

The Rev. Dr. Harris, in moving a vote of thanks to Sir Henry Parkes for his attendance, made mention of the fact that it was the hope of those who had formed the Association that it should have nothing sectional about it; on the contrary, it was hoped that it would be representative. The proposal of Dr. Harris was carried with acclamation, and the proceedings shortly afterwards terminated.

TEACHERS' LITERARY SOCIETY.—A society, having for its object the study of English literature, has recently been formed by a few enthusiastic teachers in and around Melbourne. The society is to meet monthly to read and discuss papers on questions arising out of, and elucidating, a programme of reading to be gone through by each member during the month. The subjects for reading are prescribed by the members a month in advance, and special attention is to be paid to literature set for examination in the University. So far the success of the society has been very great, and the members' roll has increased very rapidly. Mr. Frank Tate, B.A., Lecturer at the Training College, has been elected president, and Mr. Andrew Knight hon. secretary. The society meets on the second Thursday in each month.

The first working meeting was held on the 1st September in the comfortable rooms of the Melbourne Head-Teachers' Association, which were generously lent by the Association to encourage the youthful society. The subject for the meeting was Shakespeare's 'As You Like It,' and the programme consisted of papers by the president and Mr. Grieve, a recitation by Mr. D. McLachlan, and a reading of Act iv., scene 1.

In his paper, entitled 'Life in the Forest of Arden,' Mr. Tate showed that, as men are more and more bound up in the life of great cities, the idyllic life described in this play becomes increasingly attractive. But a life so free from all anxieties, so aimless and so workless, would soon bore one, especially a man gifted with 'large discourse, looking before and after.' The exiled duke and his comrades are good, easy men, to whom this animal contentment, this enjoyment of life as a long outdoor picnic, may be permanently pleasant, and Rosalind and Orlando, being kept actively busy in their love affairs, also find the life endurable; but the intellectual, reflective Jaques soon becomes a prey to unceasing *ennui*, and so spends his time 'railing at the world and all our misery.' What he lacks is plenty of good, diversified occupation, and the only remedy for him is to take a more active human interest in the doings of his fellows. Mr. Grieve's paper on 'Jaques' showed Jaques in rather a repellant aspect. His cynicism was dealt with at length, and his view of life in the famous speech, 'All the World's a Stage,' came in for rough handling. The diverse characters of Adam, the Duke, and Orlando were very well compared and contrasted with Jaques, to the latter's detriment. Mr. Grieve could see little to admire in the character, and suggested that his 'melancholy' had a physiological origin similar to that implied by the derivation of the word.

Subjects for future discussions are Tennyson's 'Princess Dora' and 'Enoch Arden.' Papers are promised on 'The Songs introduced into the Princess,' 'Tennyson's View of the Higher Education of Women,' and 'Tennyson, the Artist in Poetry.'—*Australasian Schoolmaster.*

THE KAIROUIN.—A curious and not altogether pleasing picture is drawn by Mr. Stephen Bonsal, in the *Fortnightly Review*, of the present state of the once renowned University of Fez. 'The Kairouin Cathedral and University is entirely ruled by the people who frequent it. In its sacred precincts Mahomet is the only high priest. There are, of course, *fukies*, or professors, and *emins*, the faithful ones or priests, but woe betide the priest or *fukie* who dared to address the most ragged vagabond of the fondaks, or a barefooted beggar from the Suss, in anything but terms of consideration and civility. . . . If any roll were kept, I should say there are about one thousand students regularly matriculated. Of these about four hundred are given a daily pittance of bread by the trustees of the fund bequeathed by the sainted Fatma, which has been held sacred and remained intact through all the vicissitudes of the civil and dynastic wars that have raged continually for the last six hundred years in Morocco. These four hundred assisted students are recruited by the village schoolmasters throughout the empire, and sent up to Fez to receive the "higher education" which I shall endeavour to describe, and are supported by the funds of the foundation. These *bette-studenten* receive daily a loaf of bread, and a new *jellab* once a year. They wear no other clothing but the *jellab*, under-clothing being quite beyond their means and ideas of what is proper. They sleep in the court-yards of the mosque. The most sought-after sleeping apartments for the students are little vaulted cells called *mederças*, in the immediate neighbourhood of the Kairouin. Possibly this is because the Moorish students have the same difficulty as students of the western world in persuading themselves at daybreak that prayer is better than sleep. At all events, if they have to go to chapel, they do not want to go far. But these *mederças* can only be sought after with any hope of success by students either possessing a long purse or a recognised tendency towards holy living—as they understand it. Many of the academic youths, however, succeed in finding favour in the sight of some merchant, who allows them to sleep in his house, and to take a hand — I mean this literally — in devouring the family *kousconso*. In return for these favours, the students are expected to do odd jobs, such as the New England students perform for farmers or innkeepers in order that they may obtain the money necessary for carrying on their university work during the winter. The Kairouin student looks after the merchant's mules, keeps his books, and carries his turban once a week to be rolled by Mouktar, the fashionable hatter who has a shop near to the shrine of Mulai Edriss, frequented and patronised by all the notables from the Grand Vizier down. These pensioners are the only serious students, if even they can be so called, that frequent the University. They certainly come under the denomination of what Schiller, in his celebrated Jena address, termed contemptuously 'brodgelehrte,' for they study only that they may receive some bread-winning position. To the flames of the sacred fire they are indeed mental salamanders. They generally become, after four or five years of the curriculum, *adools* or notaries, *taleebs* or doctors of law, or, perhaps, secretaries, clerks to *cadis* (judges) who cannot write. I found it very difficult—in fact, almost impossible—to get any clear idea of the curriculum followed at the University. There are certainly distinct faculties of ecclesiastical and of civil law (the Shraa), and there are very many lectures on Astrology, for to this basest variety of science the descendants of the great Arabian astronomers have come. Then there are always going on learned disquisitions on the *Bokhari*, a series of holy volumes that occupy the same position to Islam as the Talmud does to Jewry; also courses in higher mathematics, and in alchemy and divination. I must say that the Tholba whom I met showed remarkable quickness in solving mathematical problems which were far beyond my depth. With this meagre information, the knowledge I gathered with such difficulty regarding the Kairouin as an educational centre is quite exhausted. When I left the holy city a great tournament of learned men and pundits was announced to come off shortly, and I certainly would have remained to witness the proceedings if there had been any chance of my being permitted to assist at their sessions. Wise and learned pundits, the intellectual giants of Mauretania, were coming from Flemcen, Mazagran, and Marakesh, to discuss with imperturbable gravity the large question as to whether the earth revolves around the sun or *vice versâ*.

NORMAL SCHOOLS IN AMERICA.—Professor J. P. Gordy, of Ohio University, gives an account of the 'Rise and Growth of the Normal School Idea in the United States' in one of the circulars of the U. S. Bureau of Education. There are few countries in which a much-needed reform, once conceived, has been carried into effect with greater energy. In the common schools of New England no geography was taught before 1786. There was no reading-book except the Bible until 1785, and no history was taught till the end of last century. In 1789 an article appeared in the *Massachusetts Magazine* on 'The importance of studying the English Language Grammatically.' It emphasised the importance of institutions which have as one of their distinct objects the preparing of young gentlemen for 'school-keeping.' But tests as to scholarship were not to be the only ones. The examiners were to examine them as to whether they were able to teach the branches they proposed to teach 'with ease and propriety.' In 1823 Mr. Samuel R. Hall opened in Concord, Vt., a school for the training of teachers. The principles there taught were carried out practically at his own school at Bethel. Soon after he took charge of it he attempted to introduce some improvements, among which was the writing of compositions, a requirement which had never been heard of in a district school before by either teacher, pupils, or parents. The pupils objected, and their parents took sides with them. Mr. Hall requested both parents and pupils to meet him, and hear his reasons for believing in the practicability and usefulness of such an exercise. They came; and after he had stated his reasons, he allowed the pupils to decide whether they would write them or not. When the appointed day arrived, everyone, among them a little girl of eleven, had a composition written. He also prepared a series of talks, which

some of his friends urged him to publish. Acceding to their request, 'Lectures on School-Keeping' appeared in 1829. The first and second editions were soon exhausted, and soon after the Superintendent of the common schools of New York ordered an edition of 10,000 copies for distribution to all district schools of that State. About the same time the Committee of Education in the State of Kentucky recommended that every teacher in the State be supplied with a copy at the public expense. Mr. Hall's far-reaching influence was surpassed by that of Mr. James G. Carter, the 'Father of Normal Schools,' to whose exertions mainly the passing of the Normal School Act of 1838 was due. Although the earliest conception of normal schools in America was originated by Americans, it cannot be denied that much of its later development was due to European models. The idea that teachers need professional training seems to have been originated by Mulcaster in England in 1561. But it was bodiless, so to speak, without an institution to live in, until La Salle founded his school at Rheims in 1681, which he developed in 1684 into the Institute of the Brothers of the Christian Schools. But professional schools for the training of teachers lived a very precarious life in Europe for a long time. After the Institute of the Brothers of the Christian Schools, the next one was founded by August Hermann Francke. In 1697 he formed a teachers' class, composed of poor students, in connection with his orphan school at Halle, who gave him certain assistance in return for their board and tuition. In 1704 he selected twelve of these because of their piety, knowledge, and aptness to teach, and constituted them his 'Seminarium Præceptorum,' or teachers' seminary. Not until thirty-one years after—in 1735—was the first regular seminary for teachers established in Pomerania, Prussia, by Hecker, a pupil of Francke, and the second at Berlin, as a private school, in 1748. After the disasters of Jena and the Napoleonic wars, the regeneration of Prussia was sought in the education of the people. The Education Department was made a section of the Home Office, and Wilhelm von Humboldt was placed at the head of it. 'The right thing is not,' said he about this time, 'to let the schools and universities go on in a drowsy and impotent routine. The thing is to raise the culture of the nation ever higher and higher by this means.' A system thus inaugurated soon became a European model. Mr. Charles Brooks advocated it strongly in America in 1834. The normal school idea had been steadily growing since the beginning of the century. The first form in which it appeared was the belief that the teacher needs special preparation, but that this special preparation consists in the simple addition of the study of certain subjects to the training required for the professions or for business. The institutions in which this idea was embodied were the New York academies. This erroneous conception gave place to the truer idea, that the proper preparation of the teacher requires not only the mastery of the art and science of education, as far as that is possible, but a thorough grounding in the subjects he has to teach, and that the knowledge of a subject that suffices for the citizen does not suffice for the teacher. This idea was embodied in the normal schools of Massachusetts in the beginning. But while these schools had a definite conception that there is a science of education, they did not formulate their ideas as to what that science was. The normal school at Oswego took a step towards determining that science, and making explicit the art that should be based upon it. That institution taught that the only nourishment of the mind is realities, and that the whole work of the teacher consists in bringing the mind into contact with the proper realities. But this school left to the uneducated tact of the teacher the decision of the question as to what realities were proper.

The normal school at Worcester took a decided step in advance in insisting that this tact may be wonderfully quickened by the careful study of children, and in successfully embodying this idea into its method of work. The New York College for the training of teachers embodies the idea that the normal school should be a school of University grade. It was founded in 1887 by the Industrial Education Association, to supply the need of a purely professional training school for teachers, a school whose course of study should embody the theory that manual training should be a part of every school curriculum, and the ability to give instruction in it a part of every teacher's equipment. The degrees of bachelor and master of pedagogy are granted for proficiency in the various departments, which include psychology, science of education, theory and practice of kindergarten, natural science, and practice teaching. Quite recently, numerous changes have taken place that point in the direction of a wider and more general recognition of the importance of education as a University study. The school of Pedagogy in the Clark University, the reorganisation of the Albany normal school, the new departure taken by Harvard in the matter of pedagogy, are among the suggestive signs of the times. They indicate, let us hope, that the time is not far distant when an untrained teacher will be considered a greater absurdity than an untrained doctor or lawyer.

SCHOLARSHIP FRENCH.

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NOTES AND VOCABULARY TO 'LA JEUNE SIBÉRIENNE.'

[*N.B.—The rules referred to will be found in the* PRACTICAL TEACHER *for September*, 1892.]

24.1.—*lui*, from it, *i.e. la destinée.*

24.2.—*dérober*, verb inf. take away. Our word *rob* is from the same root.

24.4.—*s'arrachant*, pres. part. of verb *s'arracher*, tear one's self.

24.5.—*chaumière*, noun, fem., sing., hut.

24.6.—*servi* de *prison*, served *as* a prison.

24.8.—*verste*, noun, fem., sing., a verst, a Russian measure of length = about ⅔ mile.

24.9.—*seuil*, noun, masc., sing., threshold.

24.10.—*suivirent*, pret., ind., 3 pl. of *suivre*, follow.

24.10.—*des yeux*, with the eyes.

24.11.—*de loin*, from afar.

24.12.—*ne regarda plus*, no longer looked.

24.13.—*en arrière*, back; backwards.

24.13.—*disparut*, pret. ind., 3 sing. of *disparaître*, disappear.

24.15.—*rentrèrent dans leur triste demeure*, lit. 're-entered into their sad dwelling.' Do not translate 'dans' into English. In English *enter*, *re-enter*, are transitive; but in French *entrer* and *rentrer* must be followed by *dans*.

24.17.—*désormais*, adv. of time, henceforth.

24.17.—*allait*, imperf., ind., 3 sing. of *aller*, go.

24.17.—*leur*, the pronoun 'to them,' not the possessive adj. 'their.' See note on 6.9.

24.17.—*bien*, adv., very.

24.18.—*vécurent*, pret., ind., 3 pl. of *vivre*, live.

24.19.—*auparavant*, adv. of time, before.

Other ways of translating 'before'—

(*a*) As prep., *avant* (time); *devant* (place).

(*b*) As prep. preceding a gerundial infinitive, *avant de*.

(*c*) As conj., *avant que*.

24.21.—*poussé*, past part. of *pousser*, urge.

24.23.—*On se moquait—des deux prisonniers*, people laughed at the two prisoners. *Se moquer de*, to laugh at.

24.24.—*surtout*, especially. Literally 'above all.'

24.26.—*faite*, past part., fem., sing. of *faire*, make. The past part. is fem. sing. by Rule D. The dir. obj. *que* (= *la promesse*) precedes it.

24.27.—*de s'intéresser à eux*, lit. 'to interest herself in them, *i.e.*, 'to do what she could for them.'

24.27.—*félicitait*, imperf., ind., 3 sing. of *féliciter*, congratulate.

24.28.—*d'avance*, beforehand.

24.29.—*laissons*, imperat., 1 pl. of *laisser*, leave = 'let us leave.'

24.29.—*maintenant*, now. From *main*, hand, *tenant*, holding, *i.e.*, 'while we hold hands.'

24.32.—*accompagnée*, past part., fem., sing. of *accompagner*. See Rule D.

24.34.—*faisaient*, imperf., ind., 3 pl. of *faire*, make.

24.35.—*jusqu'au village voisin*, as far as the next village.

24.35.—*éloigné*, past part. of *éloigner*, separate. Also 'to send away,' as in 25.7.

24.36.—*d'environ*, by about.

24.36.—*chemin faisant*, lit. 'making way,' *i.e.*, 'as they pursue their journey.'

24.39.—*à moitié*, adv., half. The *noun* 'half' is *moitié*; the *adj.* 'half' = *demi*.

24.39.—*ivres*, adj., masc. or fem., pl., drunk.

24.42.—*voulurent*, pret. ind., 3 pl. of *vouloir*, wish.

24.42.—*s'acheminer*, to go (to a place); *s'y acheminer*, to go there.

25.1.—*s'assirent*, pret. ind., 3 pl. of *s'asseoir*, sit down.

25.1.—*pour se restaurer*, to take some refreshment.

25.2.—*les villageois*, the villagers.

25.4.—*en déclarant vouloir partager*, lit. 'while declaring to wish to share,' *i.e.*, 'declaring that they wished to share.'

25.5.—*ensuite*, adv. of time, afterwards.

25.8.—*crut*, pret. ind., 3 sing. of *croire*, believe; *crut pouvoir employer*, lit. 'believed to be able to employ' (see note on 25.4), *i.e.*, 'believed that she might employ.'

25.9.—*ruse*, noun, fem., sing., trick.

25.9.—*qui lui réussit*, lit. 'which succeeded to her,' *i.e.*, 'which proved successful.'

25.10.—*irions*, condit., 1 pl. of *aller*, go.

25.10.—*volontiers*, willingly.

25.11.—*devons*, pres., ind., 1 pl. of *devoir*, owe. Translate it 'must.'

25.12.—*chariots*, noun, masc., pl., carts.

25.14.—*virent*, pret., ind., 3 pl. of *voir*, see.

25.14.—*dans l'éloignement*, in the distance.

25.17.—*disparurent*, pret., ind., 3 pl. of *disparaître*, disappear.

25.18.—*mensonge*, noun, masc., sing.; lie.

25.20.—*parvint*, pret., ind., 3 sing. of *parvenir*, arrive.

25.22.—*logea*, lodged. Notice the *e* before the *a*. Verbs of the 1st conj. ending in the infin. *ger* put an *e* after the *g* when it would otherwise precede an *a*. This is to preserve the soft sound of the *g* in the infinitive.

25.24.—*Le lendemain*, the next day.

25.24.—*réveil*, noun, masc., sing.; re-awakening.

25.25.—*eût*. Subj. by Rule F (6), because following a superlative (*la première*).

25.27.—*isba*, noun, fem., sing., cottage (a Russian word).

25.29.—*vit*, pret., 3 sing. of *voir*, see.

25.29.—*toute seule*, quite alone. *Tout* used in the sense of 'quite' is an *adverb*. It nevertheless takes the form of the feminine when it precedes a feminine adjective commencing with a consonant or aspirated *h*.

25.30.—*lui revint à la mémoire*, lit. 'came back to her to the memory,' *i.e.*, 'came back to her memory.'

25.31.—*lui rendit son courage*, restored her courage to her.

25.32.—*s'achemina*, went her way.

25.34.—*après avoir dépassé*, lit. 'after having passed by.' We may say in English 'after passing by,' but *après* preceding a gerundial infinitive in French must always be followed by the compound form of that infinitive (*avoir dépassé*.)

25.35.—*enseigne*, noun, fem., sing., sign (of an inn).

25.36.—*cabaret*, noun, masc., sing., inn.

25.36.—*lequel*, which. 'Which' is translated by *lequel, laquelle*, when it follows a preposition, or is followed by *de*.

25.37.—*la veille*, the night before. *Veille* is from the same root as our word *vigil*.

25.37.—*ce que lui fit juger*, lit. 'that which made her judge,' *i.e.*, 'a circumstance which made her judge.'

25.38.—*pris*, past part. of *prendre*, take.

25.39.—*elle revenait sur ses pas*, lit. 'she was coming back on her steps,' *i.e.*, 'was retracing her steps.'.

25.40.—*pour s'orienter*, to take her bearings, lit. 'to find her east point' (*Orient*, East).

25.41.—*souriait*, imperf., ind., 3 sing. of *sourire*, smile.

25.42.—*de cette manière*, in that manner.

25.43.—*irez*, fut., 2 pl. of *aller*, to go.

25.44.—*feriez*, condit., 2 pl. of *faire*, do.

26.1.—*lui arriva*, happened to her.

26.5.—*on se moquait d'elle*, they laughed at her. See note on 24.23.

26.6.—*ce qui la jetait*, a circumstance which threw her. See note on 25.37.

26.7.—*n'ayant aucune idée*, having no idea, *ne — aucun* = the adj. 'no.'

26.8.—*pays*, noun, masc., sing., country (in a geographical sense). But 'one's native country' is *la patrie*. The country, in the sense of the rural districts, is *la campagne*.

26.9.—*parcourir*, verb, inf. to traverse.

26.9.—*s'était imaginé*, lit. 'had imagined to herself,' *i.e.*, 'had imagined.'

26.12.— *se trouvait*, lit. 'found itself.' Translate 'was.'

26.13.—*le chemin de Petersbourg*, the road *to* St. Petersbourg.

26.14.—*d'y faire ses dévotions*, to pay her devotions there.

26.16.—*voile*, noun, masc., sing., veil. But *la voile*, the sail (of a ship).

26.17.—*réussissait*, imperf., ind., 3 sing. of *réussir*, succeed.

26.18.—*qu'elle s'était formée*, lit. 'that she had formed to herself, *i.e.*, 'that she had formed.'

26.22.—*aux passants*, of the passers-by.

26.23.—*ce qui lui réussissait plus mal encore*, which proved still less successful. See notes on 25.9 and 26.6.

26.24.—*fois*, noun, fem., sing.; time (in sense of repetition).

26.26.—*que se croisaient*, which crossed one another.

26.27.—*kibick* (Russian word), a wagon.

26.28.—*celui de ces chemins*, the one of these roads.

26.29.—*qui conduisait à Kiew*, which led to Kieff; *conduisait*, imperf., ind., 3 sing. of *conduire*, lead.

26.30.—*crurent*, pret., ind., 3 pl. of *croire*, lead.

26.30.—*plaisantait*, imperf., ind., 3 sing. of *plaisanter*, joke.

26.32.—*voudrez*, fut., 2 pl. of *vouloir*, wish; *celui que vous voudrez*, which one you please.

26.32.—*conduisent*, pres., ind., 3 pl. of *conduire*, lead.

26.34.—*celui du milieu*, lit. 'that of the middle,' *i.e.*, 'the middle one.'

26.37.—*tenue*, past part., fem., sing. of *tenir*, hold, keep. Part. is fem., sing. by Rule D. The dir. obj. *que* (= *la route*), precedes it.

26.38.—*par lesquels*, by which. See note on 25.36.

26.41.—*peu considérable*, small-sized.

26.42.—*accueillie*, past part. fem., sing. of *accueillir*, to receive, to welcome.

26.47.—*de la peine*, some trouble.

26.48.—*aventurière*, noun, fem., sing., adventuress.

27.1.—*de mauvaises mœurs*, of evil life.

27.2.—*soupçon*, noun, masc., sing., suspicion.

27.2.—*de grands désagréments*, lit. 'some great unpleasantness.' Do not translate 'some.' 'Some' or 'any' when, as here, an adj. precedes the noun, is translated by *de*.

27.3.—*avant d'arriver*, before arriving. See note on 24.19 (*b*).

27.5.—*surprit*, pret., ind., 3 sing. of *surprendre*, surprise.

27.7.—*journées*, noun, fem., pl., day's marches (from *jour*, a day).

27.8.—*eût*, subj. by Rule F (6). The superl. is *les plus longues journées*.

27.8.—*faites*, past part., fem., pl. of *faire*, do. The part. is fem., pl. by Rule D. The dir. obj. *que* = *journées*.

27.8.—*elle redouble de vitesse*, she redoubled her speed. Do not translate *de*.

27.13.—*lui fit chercher un refuge*, made her seek a refuge.

When a verb in English has a direct object of a person (*her*), and an indirect object containing an infinitive mood (*seek*), the person is put in French into the dative case (*lui*, lit. *to* her).

27.18.—*abri*, noun, masc., sing.; shelter.

27.21.—*aube*, noun, fem., sing.; dawn.

27.21.—*parut*, pret., ind., 3 sing. of *paraître*, appear.

27.21.—*traîna*, pret., ind., 3 sing. of *traîner*, to drag.

27.22.—*exténuée*, past part., fem., sing. of *exténuer*, to enfeeble.

27.26.—*vers les huit heures du matin*, lit. 'towards the eight o'clock of the morning.' Translate 'towards eight o'clock in the morning.'

27.30.—*pressentait*, imperf. ind., 3 sing. of *pressentir*, have a *presentiment*.

27.33.—*faim*, noun, fem., sing., hunger.

27.34.—*elle s'approcha d'une fenêtre basse*, she approached a low window.

27.35.—*auprès de*, near.

27.36.—*triait*, imperf., ind., 3 sing. of *trier*, to pick, sort.

27.36.—*pois*, noun, masc., pl., peas. The sing. has the same form.

27.38.—*après l'avoir examinée*, after examining her. See note on 25.34 and Rule D.

27.39.—*mépris*, noun, masc., sing., scorn.

27.40.—*renvoya*, pret., ind., 3 sing. of *renvoyer*, send away.

27.40.—*durement*, adv., harshly.

27.42.—*amenée*, past. part., fem., sing. of *amener*, bring. Rule C.

27.42.—*était tombée*, had fallen. *Tomber*, like *aller*, *venir*, and a few others, forms its compound tenses with *être* instead of *avoir*.

27.43.—*boue*, noun, fem., sing. ; mud.

27.43.—*en*, by it.

27.44.—*venait de passer*, had just passed ; *venir de*, foll. by inf. of another verb = *to have just*.

27.47.—*traits*, noun, masc., pl. ; features.

28.2.—*rejetée*, past part., fem., sing. of *rejeter ; reject*, refuse.

28.4.—*à la porte de laquelle*, lit. 'at the door of whom.' Translate 'at whose door.'

28.4.—*vaincue*, past part., fem., sing. of *vaincre*, to conquer.

28.5.—*assise*, past part., fem., sing. of *asseoir*, seat.

28.6.—*conjura*, pret., ind., 3 sing. of *conjurer*, entreat.

28.7.—*s'éloigner*, lit. 'withdraw herself,' *i.e.*, go away.

28.9.—*voleurs*, noun, masc., pl., thieves ; robbers.

28.9.—*coureuses*, noun, fem., pl., adventuresses. *Coureuse* is lit. 'a woman who runs about ;' from *courir*, to run.

28.10.—*voyant*, pres. part. of *voir*, see.

28.11.—*Du moins*, at least.

28.11.—*se disait-elle*, said she to herself.

28.12.—*la porte s'en trouva fermée*. *En* is the pronoun 'of it.' See note on 619. Lit. it is 'The gate of it found itself closed.' Translate 'the gate was closed.'

28.13.—*s'assit*, pret., ind., 3 sing. of *s'asseoir*, sit down.

28.14.—*y*, to it.

28.15.—*des petits garçons*, some little boys. 'Some,' when an adj. is placed before the noun, is usually translated by *de*. *Petit garçon* is practically a compound noun, so that the partitive adj. before it must be translated *des*.

28.16.—*qui s'étaient attroupés*, who had gathered.

28.16.—*autour de*, around.

28.18.—*de voleuse*, as a thief.

28.19.—*près de*, nearly.

28.20.—*se mourant*, pres. part. of *se mourir*, to die.

28.23.—*épreuve*, noun, fem., sing. ; trial.

28.24.—*cependant*, meanwhile. This is its proper sense. Lit. it means 'during this,' *pendant-ce*. Its ordinary sense is 'however.'

28.26.—*affreuse*, adj., fem., sing., frightful.

28.28.—*starost*, the mayor of a Russian village.

28.30.—*en règle*, lit. 'in rule,' satisfactory, all right.

28.31.—*attendrie*, past part., fem., sing. of *attendrir*, to move, touch.

28.32.—*voulut*, pret., ind., 3 sing. of *vouloir*, wish.

28.32.—*se soulever*, lit. 'to raise herself,' to rise.

28.33.—*engourdis*, past part., masc., pl. of *engourdir*, benumb.

28.35.—*souliers*, noun, masc., pl., shoes.

28.36.—*nu*, adj., masc., sing., naked. Our word is *nude*.

28.36.—*jambes*, noun, fem., pl., limbs.

28.37.—*enflées*, past. part., fem., pl. of *enfler*, to swell.

28.42.—*auparavant*. See note on 24.19.

28.42.—*s'empressèrent*, pret., ind., 3 pl. of *s'empresser*, hasten.

29.1.—*traîner*, verb, inf., to draw.

29.1.—*conduisirent*, pret., ind., 3 pl. of *conduire*, lead.

29.6.—*bottines*, noun, fem., pl., boots.

29.7.—*prit congé*, took leave.

29.9.—*poursuivit*, pret., ind., 3 sing. of *poursuivre*, pursue.

29.10.—*hiver*, noun, masc., sing., winter.

29.11.—*selon que*, according as.

29.12.—*l'y obligeait*, lit. obliged her to it (*y* = to it, as in 28.14). Translate 'compelled her to do so.'

29.12.—*d'après*, according to.

29.12.—*accueil*, noun, masc., sing., reception.

29.14.—*séjour*, noun, masc., sing., stay. Our old word *sojourn* is from the same root.

29.15.—*balayant*, pres. part. of *balayer*, to sweep.

29.16.—*cousant*, pres. part. of *coudre*, to sew.

29.21.—*au premier abord*, lit. 'at the first drawing-near.' Translate 'at first.'

29.21.—*croyait*, imperf., ind., 3 sing. of *croire*, believe.

29.24.—*se roidir*, lit. 'to stiffen themselves,' to harden themselves.

29.25.—*qu'on veut les gagner*, lit. 'that one wishes to gain them.' Translate 'when people wish to prevail upon them.'

29.26.—*sans qu'ils s'en doutent*, 'without their being aware of it.' *Se douter de quelque chose* = to be aware of something.

29.30.—*puis*, then.

29.32.—*accablée*, past part., fem., sing. of *accabler*, overwhelm.

29.35.—*ainsi*, thus.

29.36.—*peu à peu*, little by little.

29.40.—*pleurant*, pres. part. of *pleurer*, weep.

29.42.—*mendiants*, noun, masc., pl. ; beggars. Our word *mendicants* is from the same root.

29.42.—*y*, to them. See 28.14 and 29.12.

29.48.—*force d'âme*, strength of mind, resolution ; *âme*, noun, fem., sing., mind.

We shall give each month, after the notes and explanations, a course of study which will take the pupil through the points in grammar required for the Scholarship Examination, and an examination paper. Each examination paper will be modelled on one already set, and will contain no questions going beyond the part of the Author already dealt with. If you find you cannot answer any question given, make a particular note of the point which has puzzled you, and look it up well. Answers to the questions set will be given in the next month's journal ; but worked examination papers will be corrected free of charge if sent to the office of this paper, marked outside, 'Scholarship French.' A stamped and addressed envelope must be sent for their return.

(Course of study for January.)

1. Rules for formation of plurals of nouns.

2. Rule of agreement of adjectives. How is the rule modified when an adj. refers to two or more nouns of different genders ?

3. Terminations of regular verbs in *er*, *ir*, and *re* (like *parler*, *finir*, *rendre*).

Examination Paper.

1. *Translate into English.*—Cette scène était plus faite pour décourager Prascovie de ses projets que des reproches ou de mauvais traitements ; cependant l'humiliation qu'elle éprouvait de se voir traiter comme un enfant se dissipa bientôt et ne la découragea plus. La glace était rompue ; elle revint à la charge à plusieurs reprises, et ses prières furent bientôt si fréquentes et si importunes que son père, perdant patience, la gronda sérieusement, et lui défendit avec sévérité de lui parler là-dessus davantage.

2. Parse fully.—*était, faite, mauvais, la* (before *découragea*), *fréquentes, sérieusement, lui, défendit.*

3. Write out in full the principal tenses of the verbs in the last question.

4. Examine the constructions in the following expressions : *pour décourager Prascovie, des reproches, de mauvais traitements, de se voir traiter, à plusieurs reprises.*

5. Translate into French :—

(*a*) Has Prascovie received her passport ? No, for her father laid it by amongst his clothes.

(*b*) She had just written a letter.

(*c*) The postman handed him a sealed letter. He opened it, but did not find in it an answer to his request.

NOTES AND NOTIONS.

BY RICHARD WADDINGTON,

Ex-President of the Half-time Council of Teachers.

A MERRY Christmas! and the happiest of happy New Years! Would that all my readers could say, with Tennyson, of 1892—

> He frothed his bumpers to the brim;
> A jollier year we shall not see!
> But though his eyes are waxing dim,
> He was a friend to me.

* * * * *

WELL, 'There's a new foot on the floor, my friend.' 1893, 'blithe and bold,' comes up to take the place of 1892. The New Year is always full of hope, may it bring health, wealth, and prosperity to you all.

* * * * *

WHAT we hope for in 1893 :—

1. A reasonable Superannuation Bill.
2. Age and attendance as the qualifications for labour.
3. Extension of Rural School Board Areas.
4. An open Inspectorate.
5. Intermittent Inspection.
6. Reasonable Security of Tenure.

Shall we get all, or any of these? The matter is very largely in the hands of the teachers. Every one of these half-dozen demands is a righteous one.

* * * * *

ON the question of 'Superannuation' Mr. Acland's reply to the deputation was far from encouraging. The Treasury blocks the way. Would the Treasury block the way if the question was the building of a few iron-clads or torpedo-boats? Not for a second. And I venture to say that if the teachers are true to themselves and see that their M.P.'s put on the necessary pressure, we shall obtain a fairly equitable scheme this next session. Now is the time to call on the promises made during the late General Election. The longer the scheme is delayed the greater the difficulty will be to get the acquiescence of the Treasury, because of the increase of the demand owing to increased numbers.

* * * * *

THE Executive of the N.U.T. has decided to draft a Bill on Superannuation. This is a grave error in tactics. Within the next few years the circumstances surrounding the question may undergo serious modification. It does not seem probable that a bill will be passed next session. To crystallise our present modest demands is to tie our hands when the Government express their good intentions in the shape of legislative effort. An abstract resolution would be invaluable in showing the feeling of the House on the question, but a bill drafted and supported by the Executive will seriously handicap us in the future. Public opinion is growing on the question, and the corollary to that growth must be a more liberal scheme than the one suggested by the Select Committee. In whittling down the just demands of the Union the Draft Bill will be a valuable document.

* * * * *

THE other day a teacher gave one of his dull boys an arithmetical test-card to take home for home lesson. Next day the boy appeared, card in hand, but without the desired solutions. 'Well, how's this?' inquired the teacher. 'Please, sir, my mother says I mustn't do it. It has killed one of our family,' replied the boy.

* * * * *

Is it true —

1. That in some parts of Lancashire children who have not passed the standard for half-time employment are allowed to work half-time with an 'attendance certificate'?
2. That in the same county children are working half-time in the coal mine under twelve years of age?
3. That children are working full-time at twelve years of age without passing the full-time exemption standard fixed by the local bye-laws?
4. That two ladies are to be nominated for the next Executive?
5. That Mrs. Burgwin is to be V.P. in 1894?
6. That at a Special Meeting to discuss the Superannuation of Teachers, owing to the unusually large salaries paid in Oldham, and the general content with present prosperity, the members turned up so well that a quorum could not be formed, and Oldham in this matter could express no opinion? (What say the Oldham assistants?)

* * * * *

THE Executive decided at its last meeting to make a move in the direction of demanding that the average attendance shall be for the best 400 times the school has been open. Town and rural schools suffer from epidemics of cold, rain, snow, and disease. The teachers must be paid, and the wherewithal is reduced by decreased grant from the Government. Now that the grant is for both proficiency and fees the demand is a very reasonable one.

* * * * *

CONSIDERABLE doubt exists as to the exact position of children who, being ten years of age before January 1st, 1893, and having passed the exemption standard for half-time employment, are not so employed. The amendment carried on the motion of Mr. Sydney Buxton, M.P., was as follows :—'On and after the first day of January, 1893, no child under the age of eleven years shall be employed in a factory or workshop, provided always that any child lawfully employed under the principal Act, or any Act relating to the employment of children, at the time that the provisions of this clause come into operation shall be exempt from its provisions.'

* * * * *

IT will be seen from this, which I extract from the Official Report, that unless the child is actually employed on January 1st he cannot be employed before he is eleven years of age.

* * * * *

ON this question of half-time I had a very interesting letter from an inspector. He says :—'I examined a child yesterday who rose at 5.30, then worked at the mill, walked a couple of miles to the examination. This should be stopped. It is cruel. This is in the country, near ———, where Standard II. prevails.' And does any human being fail to endorse the dictum of the inspector when he says 'It is cruel'? The shame of it that, at the time we are organising Technical Schools to the right and the left, these little children should be still bearing the yoke ruthlessly thrust upon them by King Cotton's sons.

ALTHOUGH the 'average salary' given in the Blue Book is not very high, yet it must still be remembered that it is the 'salary from all sources,' and that if the salary only represented the salary received for day-school work it would be considerably reduced. When I hear that under a certain School Board the 'average salary' is so much higher than was anticipated, I am reminded of the fact that under some School Boards the salary paid for evening work is compulsorily included. Let us hope the Department will confine the inquiry to payment for day-school work.

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MR. ACLAND is said to be bent on reducing the the secondary schools to a State-aided system. Let us hope that no attempt will be made to make them as inspector-ridden as the primary schools. The subject is not new, nor is Mr. Acland new to the subject; he has already had something to do with a bill intending to achieve this very laudable object. Such a measure must in some degree deal with primary education. The higher grade schools will demand attention. Might I make a suggestion? Many of our inspectors know a good deal more about secondary than primary education. If Mr. Acland conceives any system of State supervision, might I suggest the drafting of these gentlemen into the secondary inspectorate, and the appointment of teachers direct from schools, and the promotion of the sub-inspectors to the vacancies? It would be a boon to the primary schools if not to the secondary schools.

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OUR Scotch friends are agitating for the raising of the 'exemption standard.' While in England the exemption standard varies with the district, in Scotland Standard V. is universal. What the Scotch teacher describes as 'the fatal fifth,' is now too low. In England we are agitating for 'Age and Attendance.' Might not some attempt be made to induce our Scotch friends to go for the disruption of standards? I saw a very intelligent article in the *Scottish Leader* on 'Age and Attendance.'

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ON this question of 'Age and Attendance' the opposition arises from fear of additional clerical work. The principle is the right one—Attendance at a primary school is a guarantee of all possible educational progress. With this acknowledged, the fight for the freedom of the teacher to do the best for the children would be won. I don't believe we shall bring any perceptible additional clerical work on our shoulders; I believe if we face the matter fairly we may decrease rather than increase our clerical work. Why should we have the granting of the certificates? The Local Authority might well do this part of the work. At the close of each year the registers could be handed over to the Local Authority and the totalling and recording of the attendances be left in their hands.

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I AM told that in Leeds the School Board at present performs this task. In Bolton our registers are copied once a month, for the purpose of enforcing compulsory attendance. To secure anything like real compulsion the Local Authority ought to have a copy of the registers. In many cases this work is thrown on the teacher, but I believe we should have a good case and reasonable ground for success if we asked to make the Local Authority the only labour certificate-granting agency. One thing we may rest assured about, and that is that if we don't get 'Age and Attendance,' we shall get 'Age and Standard,' and the standard will be uniform for the country, but to facilitate the granting of certificates the 'sample pass' will be taken in lieu of the pass in all three subjects.

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I AM glad to see the Trades Councils are taking the matter up. The Blackburn Trades Council decided last week to co-operate with the teachers to make 'Age and Attendance' the qualifications for labour. I am endeavouring, with the assistance of the Secretary of the Blackburn Trades Council, to arrange for combined representation to the Department. This combined action ought to ensure the success of Sir R. Temple's Bill next session. The bill is to be drafted by the Union on the lines laid down by several Conferences, and explained in the pamphlet issued by the Executive on the subject.

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THAT was a very good story of Professor Laurie's. Some of my readers may have read it. However, it is worth reproducing. 'Why do you not send your children to school?' said the minister to a fisherwoman in a Banffshire village. 'Because they dinna want to gang,' answers the mother. 'But surely it is not what they want that should regulate your conduct, but what is *good for them*.' 'Oh, puir things!' retorts the mother, 'they maun have their ane wull, for it's a' we puir folk has to gie them.'

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FROM the *Board Teacher* I gather that Mr. T. A. Organ was recommended by the Finsbury Divisional members for appointment as a manager of two groups of schools, but, at the request of Mr. Clough, the nomination was sent back on November 17th. What is the matter with Mr. Clough? I understood he was once a teacher! I think that when teachers summarise their friends on the Board, Mr. Clough will hardly be included in that category. There are three gentlemen who might strengthen the next London School Board: — Messrs. Yoxall, Macnamara, and Organ, and I hope to see them attending the Thursday meetings on the Embankment before the famous tower and clock are completed.

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I HEARD a very good story about a present member of the Executive. In his 'Ball Frame' days, when he was just entering on the dignity of 'breeches' his father took him to the theatre to see the pantomime. In order to give him a good view the father shouldered the 'budding pedagogue.' At the far end of the pit was the uncle who, on being spied by the newly 'breeched,' was greeted with 'Ay, uncle George! I've got a new suit of clothes made out of your old top-coat.'

• • • • •

MR. DIBBEN, H.M. Inspector for the Finsbury Division, in one of his reports says: 'Drill has been taught with much success; but the strain of preparation for competition appears to be very great on both teachers and children.' I am afraid that this is only too true. The demand for exhibitions of the prowess of little children too often loses sight of the danger to the overwrought teachers and scholars.

THE corporal punishment question at Sheffield is a puzzle. I have met head-teachers from the north, south, east, and west, and I was always under the impression that the assistants had the full support and sympathy of the heads in the demand for the abolition of the restrictions. As an assistant I have broken these regulations times without number; if I had not I should have been dismissed for incompetence. For the last eight years I have relegated my power to my staff without any disastrous results. There are, unfortunately, some types of humanity 'which refuseth to hear the voice of the charmer, charm he never so wisely,' unless they know that the teacher has the power to charm with the rod. I knew a schoolmaster—a genuine teacher—who, when he administered punishment, recited the text 'The Lord loveth whom he chasteneth.'

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SCIENCE NOTES.

THE FIXATION OF FREE NITROGEN BY PLANTS.—The latest results obtained by Laurent and Schloesing with regard to the fixation by plants of free oxygen seem to confirm their former conclusion, that soils absolutely bare of vegetation, although containing appropriate micro-organisms, do not fix any free oxygen. During a lengthy course of experiments, dealing with seeds planted in prepared soils containing the micro-organisms usually occurring in good earth, they have not succeeded in finding any plants outside the limits of the *Leguminosæ* capable of fixing free oxygen. During the investigation of numerous cases in which the soils employed were rich in nitrogen, oats, colza, grasses, and potatoes were dealt with, and no measurable proportion of the element in its free state was fixed.

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A NEW ORGANISED FERMENT.—M. Garros, in the course of some experiments instituted by him with the practical object of promoting the use of cherry-tree gum as a substitute for gum arabic, has discovered a new organised ferment. The obstacle to its general use in this capacity—the difficulty of securing its complete solution in water—M. Garros finds to be obviated by adding to the water used a few drops of sulphuric or hydrochloric acid. When a gentle heat, preferably that from a stove maintained at a temperature of from forty degrees to forty five degrees Centigrade, is applied for twenty or twenty-five minutes, a white viscous solution is obtained which compares favourably with the product of gum arabic. Whilst studying the properties of the cherry-tree gum, M. Garros noticed that on being placed with water in a well-filled flask, the mouth of which was stopped with wadding, in the course of about a month or six weeks it was completely dissolved. A deposit was, however, formed at the bottom of the flask, which on examination proved to be a new organised ferment. The individuals composing the ferment were smaller than the cells of beer-yeast, and as they attained maturity, they detached themselves from the mass, and were seen under the microscope to be isolated, or arranged in small groups of two or more. M. Garros considers this ferment the determining cause of the solution of cherry-tree gum, solution being effected much more rapidly than usual when the ferment is added to a fresh mixture of the gum with water. The rapidity of the process is still further increased by the addition of ammonium tartrate and the maintenance of the temperature at from forty to forty-five degrees Centigrade. Hydrochloric acid, in the proportion of five per cent., hinders the fermentative process.

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ARSENIC AS A PREVENTIVE OF INFECTION.—Dr. C. F. Bryan claims in a recent paper to have established the prophylactic powers of arsenic in scarlet fever, diphtheria, and influenza. He states that an epidemic was checked in the Leicester Workhouse by this means some years ago, and cites several cases which appear to confirm the value of arsenic as a preventive.

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THE ACTION OF DIASTASE.—M. Prunet has recently been conducting a series of experiments with potato tubers, in view of the contradiction by several physiologists in recent years of the accepted theory that the transformation in the plant of starch into dextrin and sugar is effected under the influence of a diastasic ferment. The plan adopted by M. Prunet in the course of this investigation was to make comparative determinations of the quantities of dextrin and of sugar on the one hand, and of diastase on the one other, found in the anterior and posterior halves respectively of tubers in different stages of germination. The former were considered as glucose and determined by Soxleht's method, the amount of diastase being indicated by the process of Wortmann. M. Prunet shows as the result of the research that a relation does exist between the distribution of diastase and that of the dextrins and sugars, and consequently between that of diastase and the conversion of starch, thus confirming the prevalent opinion.

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A NEW SUBSTITUTE FOR SACCHARIN.—A compound possessing great sweetness is now being introduced under the name of dulcin as a substitute for saccharin. This substance, para-phenetol carbamide, was indeed obtained by Berlinerblau as long ago as 1883, but his process was too costly a one for practical purposes.

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THE COLOURING MATTER OF POLLEN.—In the course of some interesting investigations, M. Bertrand and M. Poirault claim to have established the identity of the colouring matter of yellow and orange pollen with carotin, C_{36} H_{56}, the substance to which the colour of carrots is due. An exception must, however, be made in the case of the dry pollens found in the *Urticaceæ*, *Graminaceæ*, etc., which owe their yellow colour to the cutinisation of their external membrane. The abundance of fatty matters present was found to prevent the crystallisation of the carotin of the pollen, but its iodide, C_{36} H_{56} I_2, was prepared. The coloured crystalline bodies, that appear when pollen rich in oil is mounted in glycerine and examined microscopically, are not composed of carotin, but of a fatty body, probably cholesterin, with which the oil is supersaturated.

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MICROBE CULTURES AS VACCINES.—Under the auspices of the Pasteur Institute, Dr. Tamamcheff, of Tiflis, has recently conducted a series of experiments to ascertain the effects of microbe cultures, to which a sterilised aqueous solution of phenol has been added, when used as vaccines. Guinea-pigs were inoculated with the fluid, and others were treated with the original virus containing the living microbes, in order that the effects produced might be compared. The death of the organisms present in the culture immediately took placed on the addition of the disinfectant, and it was found that the carbolisation, although it in no wise diminished the immunising value of the vaccine, reduced its toxic effects at least three to six times as compared with the living vaccine.

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THE HYDROLYTIC FUNCTIONS OF YEAST.—Mr. O'Sullivan, in continuing the experiments on yeast to which reference has been made in these columns, has found that the hydrolytic action of yeast at ordinary temperatures follows the same course as that of a simple chemical interchange, and is uninfluenced by air or carbon-dioxide, whilst its rate differs from that at which the alcoholic fermentation of yeast takes place. While any interference with the natural acidity of the yeast cell diminishes its action, experiments instituted as to the effect produced on the velocity of the hydrolytic action by rupturing the cell would seem to indicate that the whole of the invertase of the cell comes into action as soon as the cane sugar is added to the yeast, and that its action continues during the progress of the hydrolytic action. The power yeast possesses of producing alcoholic fermentation is not influenced by the fact that it has first hydrolysed cane sugar.

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THE GERMICIDAL ACTION OF VINEGAR.—Klein, in 1884, was led to state that vinegar was as effective a germicide as mercuric chloride, a dictum which some recent experiments of C. T. McClintock would seem to confirm. Vinegar containing 6·3 to 7 per cent. of acetic acid was found by him to inhibit the growth of micro-organisms as much as a solution of sublimate of the strength of one part in a thousand, while several forms of bacteria were discovered to be capable of withstanding the action of the latter germicide during periods extending from one to forty-one hours. The general opinion that sublimate possesses exceptionally high germicidal power Mr. McClintock assumes to be based on faulty experiments, asserting that enough of the salt would be carried over with the disinfected material to serve as an antiseptic, while it would tend to form with the investment of the germs an organic compound that would also act as an antiseptic,

the organisms thus being preserved instead of being destroyed. Capsules are formed about the germs, which protect them from the action of the sublimate; but at the same time, prevent their development until they are liberated by the action of other agencies, *e.g.*, the salines in the blood. The salt, though lacking in germicidal power, would appear to be useful as an antiseptic.

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THE IGNITION OF DRESS FABRICS.—Some recently-introduced dress fabrics are, as a writer in the *Mercure Scientifique* points out, dangerous in the highest degree to their wearers. Being prepared from denitrified pyroxylin, by its dissolution in a suitable solvent and manipulation in such a manner as to produce threads, which are then woven into cloth, it is highly inflammable. Persons wearing garments made from this material and standing near a fire are stated to have found themselves suddenly wrapped in flames, the articles of dress being instantly consumed. J. R. G.

NOTES ON ADVANCED AND HONOURS PHYSIOGRAPHY.

BY R. A. GREGORY, F.R.A.S.

Author of 'Physical and Astronomical Geography' and 'Elementary Physiography.' Honours Medallist in Physiography; Oxford University Extension Lecturer.

THE notes given below are for Honours students of Physiography Notes for Advanced students will be continued next month.

The Canals of Mars.—The doubling or 'gemination' of the canals of Mars, first observed by Schiaparelli, has been confirmed during the recent opposition. Until this confirmation, astronomers have looked askance at Schiaparelli's double canals. It was insinuated that the phenomenon was not real, but due to instrumental deficiencies, or fatigue of the eye, and it was said that if a dark line were drawn upon a piece of white card and looked at steadily, after a short time it would appear double. Since, however, one or two other observers have declared the gemination to be real, several explanations have been suggested to account for it. Prof. Norman Lockyer's idea that a belt of cloud was lying along the centre of each canal at the time of the apparent doubling has already been noted in these columns. The theory is a very plausible one, because the doubling seems to be connected with the planet's seasons. On this account cloud-belts would sometimes lie along the canal and at other times they would be absent. Mr. Lebour, in a letter to *Nature*, October 27th, 1892, points out that when glass is broken by torsion, the cracks produced are similar to the channels on Mars. Such fractures are a necessary consequence of the cooling of a heated interior and the shrinking of the planet's crust. 'Mere fractures, such as we meet with in our own planet, could, of course, not be seen from any considerable distance; and if the circumstances of denudation were the same in Mars as with us, the "canals" could certainly not be the representatives of our usually hidden and featureless earth-cracks. There seems, however, to exist in the extraordinarily rapid melting of gigantic ice-fields, described by Prof. Norman Lockyer, some evidence of denuding power in Mars on a scale enormously larger than is the case with us. Earth fractures—and, for the matter of that, Mars fractures, too—must many of them be lines of weakness along which denudation acts more freely than elsewhere; and if this denudation be phenomenal and cataclysmic, as appears to be likely in Mars, wide valleys or channels capable of being distinguished at great distances would soon be scoured out along them.' Another possible cause has been suggested by M. Stanislas Meunier. He has taken a metallic sphere and traced upon it lines and spots similar to those on Mars, but not double. Surrounding the sphere, at a distance of about a tenth of an inch from its surface, a fine transparent layer of muslin is fixed. This is supposed to represent the planet's atmosphere. When the sphere is looked at through the muslin, all the lines and spots are seen double, and by undulating the muslin several peculiarities are noticed which have been observed by Schiaparelli on the planet Mars. M. Meunier's explanation is that 'the solar light is reflected from the planet's surface very unequally, that from the continents exceeding that emitted by the deeper parts, seas and canals. Although the atmosphere is a limpid one, we are unable to see its motions; but if the aerial envelope includes a transparent veil of fog at a suitable height, a contrast would be produced, as was the case with the muslin, by the production of shadows which, to an observer not in a line with the rays reflected from each of the surfaces of small reflecting power, would appear as parallel images.' An excellent article on the results of observations of Mars in 1892 appears in the *Daily Graphic* of December 15.

The Fifth Satellite of Jupiter.—About two hundred and eighty years ago Galileo discovered four moons revolving round the planet Jupiter by means of his newly-invented telescope. Thousands of observers have watched the giant planet since then, without detecting any additional satellites near it. It is no wonder, then, that the announcement of the discovery of a fifth satellite by Professor Barnard, of Lick Observatory, California, has excited considerable interest. While examining the region of the sky near Jupiter on September 9th, Professor Barnard noticed what appeared to be an exceedingly small star close to the planet, and suspected it to be a new satellite. He attempted to measure the angular distance between the two bodies, but before he could get his micrometer adjusted, the faint object disappeared in the glare which always surrounds Jupiter. This was sufficient to lead the astronomer to conclude that the new body was really a satellite belonging to the Jovian system. On the following night, the distance of the body from the edge of Jupiter was measured several times, and also the angular diameter of the planet itself, so that the observations could be reduced to Jupiter's centre. From these measures the distance of the new satellite in miles was calculated by the application of Kepler's Third Law. The result came out about 112,500 miles, and the time taken by the satellite to perform a complete revolution round its primary is about 11 hours 58 minutes. With regard to the faintness of the satellite, Prof. Barnard has remarked, 'Just what the magnitude of the satellite is, it is at present quite impossible to tell. Taking into consideration its position, however, in the glare of Jupiter, it would, perhaps, not be fainter than the thirteenth magnitude. It will only be possible to settle this question with any certainty by waiting until some small star of the same magnitude is seen close to Jupiter, and then after determining its magnitude when away from the planet. In general, the satellite has been faint—much more difficult to see than the satellites of Mars.' The Lick Observatory Telescope is 36 inches in diameter, and Prof. Barnard does not think the satellite could be seen with an instrument having a diameter less than twenty-six inches, and then only under very favourable atmospheric conditions. The diameter of the satellite is probably not more than 100 miles. The elements of all the satellites of Jupiter are given in the following table:—

Satellite.	Distance in Miles.	Period of Revolution.			Diameter in Miles.
		D.	hrs.	m.	
——	112,500	0	11	58	100 (?)
Io	267,380	1	18	27	2,252
Europa	425,160	3	13	14	2,099
Ganymede	678,390	7	3	43	3,436
Callisto	1,192,820	16	16	32	2,929

The four satellites discovered by Galileo have usually been referred to as the first, second, third, and fourth satellites, reckoning from Jupiter. On this account, it is rather misleading to speak of the new body as the fifth satellite, for it is nearer the planet than any of the others. A suitable mythological name will doubtless be applied to the satellite to distinguish it from all others.

The Sun and Magnetic Disturbances.—In the February number a description was given of some disturbances of the earth's magnetism which occurred at the time of the appearance of a large spot on the sun. Lord Kelvin, at the anniversary of the Royal Society on November 30th, discussed the probability of a connection between such spots and storms on the sun and magnetic storms on the earth. His speech, which is reported in *Nature* of December 1st, contains the following remarks:—'The primary difficulty is to imagine the sun a variable magnet or electro-magnet, powerful enough to produce at the earth's distance changes of magnetic force amounting, in extreme cases, to as much as $\frac{1}{10}$ or $\frac{1}{20}$, frequently, in ordinary magnetic storms, to as much as $\frac{1}{100}$ of the undisturbed terrestrial magnetic force.

'The earth's distance from the sun is 228 times the sun's radius, and the cube of this number is about 12,000,000. Hence, if the sun were, as Gilbert found the earth to be, a globular magnet, and if it were of the same average intensity of magnetisation as the earth, we see, according to the known law of magnetic force at a distance, that the magnetic force due to the sun at the earth's distance from it, in any direction, would be only a twelve-millionth of the actual force of terrestrial magnetisation at any point of the earth's

surface in a corresponding position relatively to the magnetic axis. Hence the sun must be a magnet of not much short of 12,000 times the average intensity of the terrestrial magnet (a not absolutely inconceivable supposition) to produce, by direct action simply as a magnet, any disturbance of terrestrial magnetic force sensible to the instruments of our magnetic observatories.'

Lord Kelvin has investigated the probability and possibility of the sun being an intensely strong magnet, with special reference to magnetic storms. Of a storm of this character, which was registered by the recording instruments in a number of magnetic observatories, he says:—'In this eight hours of a not very severe magnetic storm, as much work must have been done by the sun in sending magnetic waves out in all directions through space as he actually does in four months of his regular heat and light. This result, it seems to me, is absolutely conclusive against the supposition that terrestrial magnetic storms are due to magnetic action of the sun; or to any kind of dynamical action taking place within the sun, or in connection with hurricanes in his atmosphere, or anywhere near the sun outside. It seems as if we may also be forced to conclude that the supposed connection between magnetic storms and sun-spots is unreal, and that the seeming agreement between the periods has been a mere coincidence.'

Mountain Formation.—Our earliest conceptions regarding the origin of mountains were based on the assumption that they were 'brought forth'—that is, that they consisted of material that had been suddenly extruded from below and piled up in heaps and ridges upon the surface of the earth. This is true of volcanic cones only, which constitute a very inconsiderable proportion indeed of mountain masses, nearly the whole of which consist of strata which have been lifted in mass and crumpled up into series of elevated ridges. The cause of this uplifting and crumpling of the earth's crust is the effort of the crust to diminish the area of its surface by adapting itself to the diminishing bulk of the earth due to cooling—in fact the process is simply the excessively gradual collapse of the solid crust upon the molten and shrinking interior. This collapse produces a diminished surface area by means of compression and crumpling due to tangential pressure in the crust itself, which necessarily increases in thickness at the same time.

Had the earth, at the time when its surface began to cool and consolidate, consisted of a perfectly spherical mass of material, absolutely homogeneous, and suspended motionless in space without either atmosphere surrounding it or water vapour to condense upon its surface, then these crumplings of the crust might have been developed in the accurately geometrical fashion suggested by Elie de Beaumont in his 'Réseau Pentagonal.' According to his theory, the great mountain ranges had not all been developed at the same period in the world's history. The subsequent researches of geologists have proved that he is correct in this; but his other contentions, that there is invariably a difference in the orientation of ranges of different geological ages and a parallelism in the orientation of ranges of the same geological age, have been by no means satisfactorily established. His theory demands that the orientation of the mountain ranges, with regard to the meridian, shall be mathematically exact in their angles, not only to degrees, but to minutes. He at first demonstrated that there are twenty separate mountain systems; ultimately he increased the number to ninety-five, but making allowance for doubtful cases, he restricted the number to sixty systems. Recent research has shown that these systems have received their main elevation at widely different periods, some of them so early as the Archæan, others so late as the later Tertiary, with indications, as in the Himalayas, that the movement is continuing at the present day. In some cases, where comparatively recent compression has taken place in previously undisturbed areas of the newer rocks, a coincidence between these foldings and the present surface features of the country may be distinguished; but in most cases, and in all cases of the more ancient strata, the connection between the two has been obliterated by weathering and denudation. Where the intensity of lateral pressure was greatest, there the contortion of the strata was most pronounced, resulting in the development of acute anticlines and synclines, the rock material in the troughs of the latter being crushed and compressed, that of the arches of the anticlines being strained and stretched until fracture took place to a depth depending upon the thickness of the strata that were folded. Into these gaping fissures water would find its way and form channels that would ultimately develop into valleys, and erosion would proceed more rapidly in rocks that had been subjected to strain and tension than in those subjected to pressure; hence we have the explanation of the seeming anomaly of mountain peaks consisting of synclines and deep valleys eroded in anticlines. Where the amount of pressure was considerably greater on one side than on the other, the anticlines were pushed over the synclines, resulting in the inversion of the strata until the strain upon the septum joining the arch and the trough resulted in fracture and faulting, and sometimes in the development of thrust planes, by which newer strata were pushed for miles over the older strata until the latter were completely masked. Where a series of such thrust planes have occurred, as in the N.-W. Highlands of Scotland and in the Alps, the stratigraphical geology of the areas thus affected affords the most difficult of problems for the geologist to unravel, and complicates the structure of mountain masses to such an extent that it is with the greatest difficulty that the history of their formation can be read. Mountain ranges, however, do not in all cases consist of a single ridge, but of a series of ridges approximately parallel to one another, no one ridge extending in an unbroken line the whole length of the range, for in most cases, as each ridge dies out, another has just commenced, either in front of or behind it, and continues in the same general direction, though generally with a slight deviation from it; and thus the range as a whole assumes the form of a gentle curve. The problem is still further complicated by lateral pressure being developed in various directions and crossing at various angles—sometimes acute, and sometimes at right angles. This complication is due to the fact that the compression of the crust is not confined to any one given direction, and does not necessarily coincide with parallels either of latitude or longitude, but takes place in all directions, subject to the influence of many limiting but not easily recognisable factors. Though we have thus in a shrinking globe a cause sufficient to account for the crumpling of the crust, without which the formation of a mountain range would be impossible, we have by no means a sufficient explanation of the causes that have fashioned these foundation-stones into their present styles of architecture. These must be sought in the initial differences in the composition and texture of the rock material upon which the rate and method of its weathering will depend, and upon the variations in the rate of activity of these weathering agents.

Cause of the Glacial Period.—The fact that the enormous area of about four millions of square miles of Northern America, and about two millions of Northern Europe, were covered with a continuous sheet of ice (which, on a moderate estimate, averaged three-fourths of a mile in thickness) during a comparatively recent period in the world's history, has led to much speculation regarding the cause which produced such wonderful changes in the climatic conditions of the northern hemisphere, to which, however, they were not entirely confined, as numerous and extensive traces occur in the southern also. The suggestions that these conditions were due to the solar system passing through colder regions in space, of the existence of which we have no evidence whatever, or that they were due to a diminution of the heat of the sun, which is equally incapable of proof, must be dismissed on the grounds that these suggested causes would produce a general refrigeration of the whole earth.

The cold in either case would be most intense, however, at the Poles, from which the ice by extension would encroach on the surrounding areas. But it has been proved conclusively that the great ice sheet did not originate from the extension of a polar ice cap, for the centre of extension in America lay south of the Arctic circle, and a general lowering of the temperature would have diminished the amount of evaporation, and, consequently, the precipitation of snow, upon which the origin of glacier ice depends. A low temperature alone is insufficient, otherwise Siberia would be ice-clad, but that, combined with abundant precipitation, as in Greenland, produces enormous permanent ice-fields. The theory that has quite recently been advanced in America by Chamberlin and Comstock, that the Glacial Period was due to the shifting of the earth's axis to a point somewhere in Greenland, is liable to the objections that the rate of the shifting of the Poles, 450 ft. per year, was far too slow to produce such great changes in a reasonable time, and that the warm climate that preceded it prevailed in areas that surrounded the actual North Pole as a centre. A much more satisfactory theory is that of Dr. James Croll in his famous work on 'Climate and Time,' which was also adopted by Prof. James Geikie in his 'Great Ice Age.' It is based on a sound foundation of astronomical facts; the ellipticity of the earth's orbit and the precession of the equinoxes. At the present time the earth is about 3,000,000 miles nearer the sun while it is winter in the northern hemisphere than it is in summer. Summer, however, is seven days longer than winter. The precession of the equinoxes will reverse this in 10,500 years, and we shall then be more distant from the sun in winter in the northern hemisphere by about the same amount, and winter will also be longer than summer.

In addition, there are recurrent periods when a number of the planets are simultaneously in such a position in their orbits with reference to that of the earth that the earth is deflected from its course by their attraction, and the ellipticity of its orbit is still further increased. Such a period occurred about 250,000 years

ago; the earth was then about 10,500,000 miles farther from the sun in winter than in summer, and winter was nearly twenty-eight days longer than summer.

Dr. Ball has discovered recently that 'of the total amount of heat received from the sun on the hemisphere of the earth in the course of a year 63 per cent. is received during summer and 37 per cent. during winter.'

Dr. Croll also assumed that during these periods of greatest ellipticity the southern hemisphere would receive the greater amount of heat. This, he believed, would divert the present south-east trade winds (which blow the warm equatorial waters along the north-east coast of South America into the Caribbean Sea and the Gulf of Mexico), and thereby cut off the supply of warm water which constitutes the Gulf Stream. The south-east trade winds being deflected at Cape San Roque from the north-east to the south-east coast of South America would carry the heated waters into the South Atlantic instead, and thus still further accentuate the effects of the astronomical conditions favourable to the development of an Ice Age in the northern hemisphere.

The facts stated and the assumptions made by Dr. Croll seem to substantiate his theory in the most satisfactory manner. A Russian meteorologist, Woeikoff objects that the distribution of heat upon the globe is not such as it ought to be according to theory, and that possibly, when the winters of the northern hemisphere occurred when the earth was in Aphelion, they were not colder than now. To this it may be replied that, paradoxical though the distribution of heat upon the surface of the globe may be, it would be more paradoxical still were a vastly increased distance from the sun not to be accompanied by a diminution in the amount of heat received from it.

Woeikoff states that at Iquitos, on the upper waters of the Amazon, over 1,000 miles from the Atlantic, and beyond the influence of ocean currents, the mean annual temperature is only 78° Fahr., though it is only 3½° south of the Equator, and only 300 feet above sea-level.

At Verkhojansk, in north-east Siberia, 67° N., and also beyond influence of ocean currents, the winter is the coldest on the globe, viz.—56° F. in January. Still here the mean yearly temperature is 21° F., so that the actual difference between Iquitos and Verkhojansk is only about 75° F. Theoretically, it should be 172° F., in proportion to the heat derived from the sun. From the amounts of heat actually received from the sun upon the 50th and 60th parallels respectively in January, the difference ought to be about 170° F. It is, however, only about 20° F., though the amount of heat received upon the 50th in January is three times the amount received on the 60th parallel.

These facts, though sufficiently striking, bear only upon the question of the relative distribution of solar heat upon the globe under the present astronomical conditions of distance from the sun; they do not invalidate Croll's assumption that an enormous increase of that distance would be accompanied by a diminution of the *total* amount of heat received upon the earth.

(To be continued.)

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CONVERSATIONAL LESSONS IN CHEMISTRY.

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In these lessons we shall endeavour, by simple experiments, to show the chemical nature and properties of the bodies referred to in the following

SYLLABUS:

WATER—Hard and Soft—Solutions—Composition.

AIR—Composition and Properties—Pure and Impure.

CARBON—Charcoal—Blacklead—Coal—Diamond—Chalk—Carbonic Acid.

SULPHUR—Composition and Properties.

CHLORINE—Bleaching—Disinfecting—Composition and Properties.

ACIDS—Common Ones—Properties.

ALKALIS—Action of Soda—Potash and Ammonia.

LIME AND CLAY—Composition—Properties.

METALS—Classes of Properties of Iron—Lead—Copper—Zinc—Mercury—Silver—Gold—Tin—Sodium—Potassium.

CARBONS COMPOUNDS—Vinegar—Fats—Oils—Soap—Sugar—Starch—Spirit—Gluten of Wheat.

The apparatus necessary for the due performance of our experiments is as follows:—

Two flasks.	Thistle funnel.
Retort stand.	Beehive shelf.
Pneumatic trough.	Blow-pipe.
Tripod.	Blow-pipe jet.
Spirit lamp or Bunsen burner.	Crucible.
Two gas jars (glass pickle or jam jars will do).	Two watch-glasses.
Sand bath.	Pipe-clay triangle.
Retort.	Glass tubing.
Beaker.	Rubber tubing.
Test tube stand.	Rubber cork.
Twelve test tubes.	Electrolytic cell.
Filter funnel.	Piece of charcoal.
Filter papers.	Cork-borers.
	Two evaporating dishes.
	File.

Arrangements have been made with A. Gallenkamp, 6, Cross Street, Finsbury Pavement, E.C., to supply the whole set of apparatus for 11s. 11d. The coupon for the current number of the PRACTICAL TEACHER must be sent when applying for sets, or a higher price than the above will be charged.

In fitting up the flask, first carefully insert the thistle funnel in one of the holes of the rubber cork until the tube is within an eighth of an inch of the bottom of the flask, so that it may easily be below the surface of any liquid which may be placed in the flask. By this means an escape of gas by way of the thistle funnel will be prevented. Now select a piece of glass tubing about a foot long. Soften this about two inches from the end by placing it in an ordinary gas flame (batwing) until it falls at right angles to the longer portion thus:—

Fig. 1.

Place the ends A, B for a few minutes in the flame of your Bunsen (or spirit-lamp) until the sharp edges are rounded off, and thus avoid any cutting of the rubber cork and tubing. The short end is now inserted in the second hole of the rubber cork, and we have a flask fitted with thistle funnel and leading tube, as in the annexed diagram:—

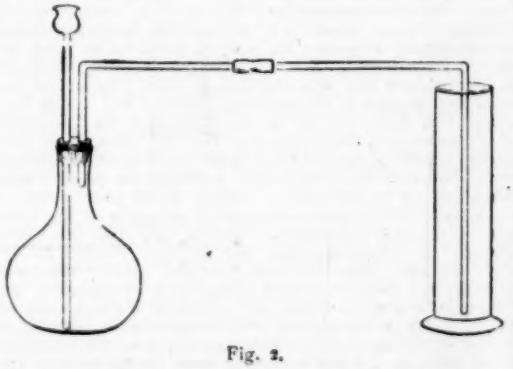

Fig. 2.

Another piece of tubing, two or three inches longer than the depth of your gas jar, must now be bent and rounded as before, and the two tubes can be put into air-tight connection by means of an inch or two of rubber tubing. We are now in a position to collect gases heavier than air, for the gas, when evolved, will sink to the bottom of the jar and drive out the air. This is collection by *downward displacement of air.*

If the second tube be made vertical to the first, and the jar, on proper supports, be inverted over it, we shall be in a position to collect gases lighter than air by *upward displacement of air*.

If the gas be insoluble in water, we can most effectually obtain it pure by using the pnuematic trough—a name given to any vessel containing water or other liquid by the displacement of which the gas is collected. How this is done will be evident from what follows. Bend a whole length of glass tubing thus :—

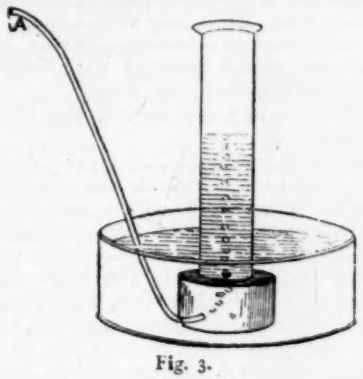

Fig. 3.

The end A may be attached by rubber tubing either to the flask above shown or to a straight piece of glass tubing, inserted in the beak of a retort by means of a cork as shown below :—

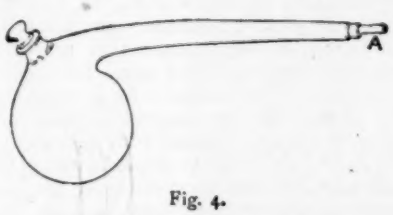

Fig. 4.

The gas jar is filled with water and placed mouth downwards on the beehive shelf over the central hole ; the leading tube carries the gas under this shelf, and as it cannot escape except by way of this hole in the roof of the shelf, we soon have our jar full of gas.

The above introductory remarks must be carefully read, and practice in fitting up apparatus should be continued until facility is obtained. Above all things, haste must be avoided and thoroughness aimed at, in order that the various parts may be well and truly fitted together. The author of these lessons will gladly answer any questions concerning the practical carrying out of his suggestions, and now, the prelude being accomplished, let us plunge *in medias res*.

Lesson I.—In these two bowls, of which one contains rain water and the other tap or pump water, please endeavour to wash your hands. What difference do you detect? The former is soft, whilst the latter is hard. Place a portion of the former in your beaker, and boil to dryness. Do the same with the latter. Now say what you note. The former leaves no solid matter ; in the case of the latter, the sides of the beaker are whitened with what must be the solid remnant, after evaporation, of the tap water. In what utensil is hard water frequently boiled? In the kettle. What would you expect to find in the kettle? A sediment. Take this kettle and search for it. Do you find it? Yes ; it is the 'fur.' Whence comes this hard water? From the earth. But how into the earth? As rain from the clouds. And to the clouds? From the sea. What part of sea water is left behind when sea water passes into the clouds? The salt. As rain water leaves no sediment when evaporated, whence come the substances to which the hardness of water is due? Undoubtedly from the earth. Here are sugar, salt, alum, soda, nitre, and bluestone ; place them in water. They disappear. What do we say the water has done to them? It has dissolved them. Name some things which water will not dissolve? Sealing-wax, sulphur, oil, indiarubber, camphor. Now place your sealing-wax in alcohol (methylated spirit) ; your oil in ether ; your indiarubber and your sulphur in this foul-smelling carbon-bisulphide ; your camphor in chloroform. What do you observe? In each case there is solution. Hence you see that, although water is called the 'universal solvent,' there are substances which it cannot dissolve, for which, however, appropriate solvents can be found. Here is some tap or spring water in a retort. Place the beak of

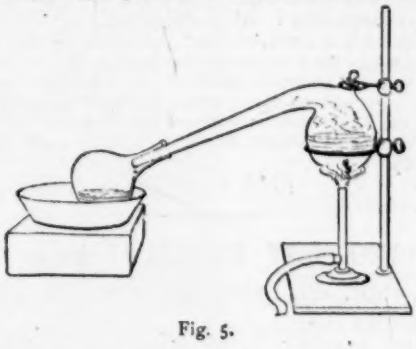

Fig. 5.

the retort in a flask resting in an evaporating dish full of cold water, and apply heat. What is it that collects in the receiver? Pure water, for the process is similar to that concerned in the formation of rain water. Very good ; the technical name for the process is distillation, and the liquid contained in the receiver is the distillate. Now take some powdered limestone, chalk, or marble (it does not matter which as, chemically, they are all the same), and add them to the pure water. They do not dissolve, but the particles float about in the liquid. You mean they are 'suspended' in it. Now we will prepare a gas which is found in air and which is also present in the interior of the earth, viz., carbon dioxide. The apparatus required is that already described as suitable for collecting a gas by downward displacement of air, and consists of a flask fitted with thistle funnel and leading tube. Place some marble chips in the flask and re-cork. Pour some spirits of salt (hydrochloric acid) down the thistle funnel, and place the leading tube in the chalk and water. The chalk is dissolving. Quite right. What is it which is dissolving the limestone, marble, or chalk? It is water which contains carbon dioxide. Can you see that this is what takes place in the earth? Oh, yes ; for you have said that there is carbon dioxide in both the air and in the interior of the earth's crust, and I know that limestone rocks are met with in all parts of the earth. To what would you compare the distilled water? To rain water. And this water which has dissolved the limestone? Ah, I see ; that is the spring water. Now, please boil this water, and we shall have the 'fur' deposited. Exactly so. In boiling, what do we drive out of the water? The carbon dioxide. And what follows? The water is now unable to retain the limestone in solution, and it is deposited. Quite so. Now, what did the acid do to the limestone? It caused carbon dioxide to be released from it. Does that suggest a means of testing the truth of our statements? Yes ; for if the fur is really limestone, it also will yield CO_2 (carbon dioxide). To assist you, I will tell you of a very simple test for CO_2. Here is some quicklime. Put it in water for some time and then decant, *i.e.*, pour off, the supernatant clear liquid. Now breathe into it. Pass CO_2 into it. Clear out your flask, and replace your limestone by kettle fur. To this add acid as above, and pass resulting gas into a third portion. Now, sir, what do you infer? That

the gas from fur and limestone are the same, for they all make the lime water milky, and that, strange to say, the same gas (viz., CO_2) is contained in great quantity in expired air.

Take another portion of your pure distilled water. Here is some plaster of paris (gypsum), which, as a rock, is as common as limestone; shake some of the powder into the water. Decant the clear supernatant liquid. Feel it with your hands. It is hard. Now boil and again try. It is still hard. Very good; place a piece of soap in the liquid and try to lather. Ah, what is that on the top of the water? It is the curded soap. Now is the water soft or hard? Soft. Why do laundry women boil water before washing in it? I cannot say. Try. Suppose we admit that the water contains both limestone and gypsum, as most waters do. Oh, I see now. She boils to drive off the CO_2, and so soften the water. Yes; but the gypsum? Ah, she must use soap to get rid of that hardness, and I suppose the clothes will get no benefit from the soap until the gypsum has been rendered harmless. Exactly so; and chemists speak of the limestone hardness as temporary and of the gypsum hardness as permanent because the former can be softened by merely boiling, whilst the gypsum, or permanent hardness, can only be nullified by using soap.

(To be continued.)

WELL-KNOWN TEACHERS AT WORK.

XIV.—MR. WILLIAM BRIGGS, B.A., LL.B.

Founder and Principal of University Correspondence College.

In relating to the readers of THE PRACTICAL TEACHER the particulars of my interview, at Cambridge, with the gentleman whose name stands at the head of this paper, I shall probably best consult both their inclinations and their interests by plunging at once *in medias res*, leaving to another pen than mine, or at least to a more convenient season, the old university town with that quaint air of the Middle Ages still clinging to its queer streets, its medley collection of buildings and courts, and its caps and gowns flitting round every corner. I found the Principal in his workshop—his study. There were abundant signs to hand of the work of a man who lives by his brain, in the mass of papers and memoranda that strewed the tables and the old carved *écritoire*. But the other sides of the room showed at a glance—by the antique furniture, the collection of *bric-à-brac*, and the samples of old china such as one rarely meets in a day's march—that its occupant was no Jay Gould, but cultivated the gentler and more social sides of life to some purpose.

Mr. Briggs received me with a north-country heartiness of manner; for he is a Yorkshireman, and proud of the fact, too. He had a successful career at the Yorkshire College, where he obtained the first place in Mathematics, was admitted a Fellow of the Chemical Society, and subsequently accepted a Marquis of Bute professorship in the north of Scotland. But this proved too limited a sphere for the energies of the 'educational Whiteley,' as he was dubbed by a facetious correspondent. Part of his spare time was utilised in drawing up a series of most careful lessons in Mathematics for the benefit of some old students at a distance, in whom his interest was still keen. The idea naturally suggested itself—why not place the results of all this labour at the disposal of a wider circle? He advertised; the post brought several and an increasing number of requests for help, first in Mathematics only, and for the lower examinations, then in other and still other subjects, and for higher and still higher examinations, until other tutors were engaged at a distance from the base of operations, systematic courses were drawn up in all subjects for several examinations, and so the work grew and extended. It had been aided almost from the first by the judicious publication of some much-needed text-books and guides, specially referring to the examinations of the University of London. Then a change of *venue* became necessary, and since 1887 this Moltke of educational strategy has directed from Cambridge the operations of numberless scattered, and often isolated, students against the bulwarks of university degrees.

Much of the foregoing I had previously gathered from ever busy rumour, but it was confirmed and filled in by the ready replies of my genial host. As the points that chiefly roused my curiosity and interest in connection with this unique educational product of the last decade are probably also those that have arisen in the minds of my readers, I shall report the major part of my interview almost verbatim, but before doing so I must be pardoned for recording my personal impressions of its head. I have referred incidentally to his geniality and heartiness of manner; indeed, this *bonhomie* struck me as one of his most marked characteristics. But beneath this there was a sterling earnestness of purpose, a sincerity in the pursuit of what he holds to be worthy objects, an honest belief (not unmixed with confidence) in himself, that impressed me considerably, and which must have no slight influence on those who come into continuous relations with him. As a scholar he is evidently and necessarily characterised by *range* rather than *intensity*, but a man who has graduated with honours in both arts and laws, who is a Fellow of the Chemical Society, who has written and edited text-books in mathematics and in natural science, and who has an intimate acquaintance with almost every detail of such an institution as the one I am describing, cannot with the slightest colour of truth be called shallow. Mr. Briggs is never satisfied unless he can get some amount of reading, however small, into every day's work. On another side, he is undoubtedly a keen man of business. The success which has attended the correspondence tuition; the enterprise which has, as I learnt, supplemented the correspondence work proper by several ancillary developments; the energy, acumen, and insight shown by the intimate knowledge the Principal possesses of every *rouage* in his educational machine; the intimate and far-reaching calculations which are necessary to place every branch of the work on the only satisfactory—the self-paying—basis; all this goes to make up what we mean by a good man of business. In some connections I had, of course, no opportunity of observation, but I am certain he is a man of great tact, and indications were not wanting that his relations with his staff of tutors are of a cordial and pleasant nature. On the whole, I was greatly impressed with this somewhat rare combination of qualities. Evidently here, at any rate, was the right man in the right place.

'Would you give me some particulars as to the rapidity of growth of your institution?' was my first question. 'I know that it must have been very rapid, from my own observation during the last five years.'

'The time you have mentioned,' was the reply, 'corresponds with the date when our successes became sufficiently numerous to attract some amount of public attention of themselves. In justice to our students I should like to say at once that their recommendations have since the very first been the main cause of our rapid extension. Undoubtedly, the actual start was made through advertising; but, since the first batch of students, from two-thirds to three-quarters on the average of all new-comers have been recommended to us by old pupils. As you suggest, our success has been almost phenomenal—as phenomenal, indeed, as the previous need for our existence must have been. Taking London University examinations alone, we have had, roughly speaking, each year, for the last six years, as many hundreds of our students successful as there are years in the history of the college. Our total successes at London in this our sixth year are over six hundred.'

'And has your success been invariably progressive?'

'Yes and no. Our total of successes has increased steadily year by year, and so has the ratio of our successful students to the total number of passes in each examination. But you must bear in mind that the number of entries varies, and so, within certain limits, does the standard required for a pass; so that, even though our successes at a particular examination may be numerically smaller this year than last, the proportion of successful candidates prepared by us may be, and is, greater. The total of our successes in the faculty of Laws has increased, the last three years, in geometrical progression; while the number of our graduates in Science has been every year during the same period equal to, or greater than, our total in the two years preceding. The number of successful students prepared by us is now in all cases equal to the total number of passes recorded by the University from all sources a few years ago. And so I might go on wearying you with illustrations of the same fact. Let me refer you instead to our tabulated record.'

'Can you give me a short outline of the general method of work on which you have relied for such stupendous results?'

'Certainly; but again I cannot do so better than in the words of our prospectus:—"Each week the student receives a scheme of study, stating what portions of the text-books are to be read, indicating important points, and giving hints, notes on difficult and salient portions, and illustrative examples, with selected text-book exercises, in mathematical subjects. After the first week, along with these, a test paper (compiled from previous examination papers) is given on the work of the preceding week, the answers to which should be posted to the tutor by a day arranged. These are then examined, and returned with corrections, hints, and model answers in each subject, and solutions of all difficulties. The courses of instruction furnish an amount of aid to each student for which the fees charged would be totally inadequate but for the large number requiring the same preparation. They, however, ensure him all the benefits of individual tuition, the individual interests of each candidate being studied, and general arrangements modified to suit particular cases wherever practicable. On account of the large number of our students, we can afford to give such very full solutions (with hints) as will cover all general difficulties, and so the tutor can devote his whole time economically to correcting the individual weaknesses of a candidate."'

'There are, of course, rival institutions running on somewhat similar lines to yours. If it is a fair question, what, in your opinion, has been the cause of your outdistancing them so completely?'

'Of course I have my own opinion on the point, which you are welcome to for what it is worth. One of the chief elements in our success has been the com-

plete and thorough systematising of those parts of the working which are capable of being so treated. The individual freedom of our tutors is not interfered with unnecessarily; on the contrary, they have a much freer hand, through being relieved of what would be drudgery to a man of education and scholarship—I mean such things as the mechanical reproduction of papers, forwarding, directing, stamping answer-books, and the thousand other things incidental to such work. All this is done by clerks and a messenger. You will understand that the saving effected in more ways than one is very great. This element of success dates almost from the very commencement of our operations. The next was necessarily of later growth — the economy effected by the large number of students working with the College (you will pardon me if I fall into quoting again from our prospectus—it is impossible to express my meaning more concisely) enabled us to reduce fees to a minimum without in the least degree impairing the efficiency of the tuition we give. Other things that have tended to give us a "pull" over friendly rivals I need only mention, for you will see that they are but the outcome of what I have just stated. Our tutors are men of high academic standing in the respective branches in which they have specialised. We send to our students, week by week, a full paper of Notes on the week's work in each subject, and return with each corrected answer-book a sheet of Model Answers to the questions for revision before the examination. If a student is unable to sit for the examination for which he has entered with us, his name can be transferred to the next year's class for a nominal fee; and if he fails to pass his examination, after working fully through our ordinary course, we prepare him without fee the following year. I should mention one other detail—a mere detail. Our lending library now contains over ten thousand volumes, necessarily largely duplicates; this is one of the many ways in which we endeavour to consult our students' pockets.'

'Of course you are aware, Mr. Briggs, that you have enemies who declare that your aim is to "cram" undigested food down more or less reluctant throats—in short, that your methods are a travesty of education?'

'Yes, I know that such things have been said and will be said again. Even were your graphic description literally true, the fault would not lie with us, but with the whole system of public examinations as conducted at the present time. But as far as we are concerned, the charge is anything but true. Our primary object is to place competent advice and assistance within the reach of those who could not otherwise obtain it, and of how successful we have been in this we have constantly recurring proofs in grateful testimony from every corner of the United Kingdom, not to say of the World. But when we have advised text-books and courses of reading, it is our rule to discourage mere "cram"; we say "Get up your work in the most thoroughly systematic, scholarly manner possible, if you wish to achieve success."

'But if we have enemies, our friends are much more numerous, and you will rightly consider their testimony of more weight than mine. I can do little more than indicate some of the links in the whole chain of evidence in favour of the genuineness of our work. First, there are those students who have worked with us through their whole degree course. Surely it is obvious that if a weak foundation of mere cram had been laid in the first instance, the whole superstructure would have given way long before the top-stone was reached. I am at liberty to mention the name of one gentleman, whom we prepared for the London M.A. in Philosophy in 1888, Mr. J. Welton. Two years later he was placed first, in order of merit, in the Moral Sciences Tripos at Cambridge University, and

in 1891 he gained the Marshall prize for Political Economy, and was appointed Lecturer in Education at the Yorkshire College, Victoria University. In such a case the presumption is that correspondence tuition laid a sound foundation. Then, the system on which we work has University sanction. The syllabuses of the Cambridge Higher Local Examination and of the LL.A. Examination of St. Andrews direct students to correspondence classes. The present Vice-Chancellor of Cambridge University, Dr. Peile, has had, together with other Cambridge graduates, some experience of correspondence tuition, and says that it, of all modes of education, requires the most accurate and thorough knowledge on the part of the teacher. The University of Chicago has recently done us the honour of officially asking our advice on this very subject, apparently on the assumption that we had more experience in the matter than any other society. Again, educationists of standing have recommended students to the fostering care of University Correspondence College, or have written in high terms in the Press of teaching by correspondence. Among such I may mention Canon Daniel, several college tutors at Cambridge, the secretary of the N.U.T. (who placed his son under our tuition), a University professor (who did the same), Mr. Courthope Bowen, principals of training colleges, and head masters of City schools (one of whom sent his son). Among our pupils we number or have numbered the Professor of English in a German University, the Principal of a Training College, two Canons of the Church of England (one the head of a college), a general and a lieutenant-colonel, and, within the last three years, over one hundred who were already graduates, many of whom of course read with us merely for the purpose of self-improvement. Lastly, a large section of the Press, as you will have seen, or can easily verify for yourself, including all the leading educational journals, have written strongly in our favour. You will excuse the length of this defence, but your challenge put me somewhat on my mettle.'

'Thank you; I am glad to have your side of the case so completely put. Now, may I ask if you consider correspondence tuition superior to oral, in cases where the latter is to be had?'

'Each method has its distinct advantages. With a capable teacher and a small class I should unreservedly advise the latter; but these conditions are very often not obtainable. In large classes it is not too much to say that the few brilliant pupils fix the rate of progress of the class, which is in consequence too rapid for the majority, who for the most part have to go to the wall. In correspondence teaching, every pupil gets the same treatment and the same amount of attention. There is no injustice in this to anyone; the hare gets on faster and learns more without in any way interfering with the slower progress of the tortoise. The two methods are capable of being compared in detail but I think I have stated the essential difference.' Before I could reply the Principal added:—'I remember you distinctly specified, "where oral tuition is to be had." As I have, I think, already implied, correspondence tuition derives its primary and sufficient justification from the cases of students whose time is fully occupied during ordinary lecture hours, or who live at a distance from a lecture centre. Very many junior masters in schools, for example, are in this position.'

'Do you consider tuition by correspondence suitable for boys of school age?'

'Certainly not, and for this opinion it is sufficient to mention one reason out of many. The element of personal influence, never unimportant, is of supremest importance in the teaching of boys, and this is, of necessity, almost entirely absent under our system.'

'You mentioned just now that the number of your Science students is increasing by leaps and bounds. How do you contrive to coach them in the practical part of their work by correspondence?'

'I am glad you have asked that question. It has been the fate of many and many a good man at London to enter for the Intermediate Examination in Science well prepared in all other points, but weak—and in consequence ploughed—in his practical work, especially the biology. We do a good deal under the correspondence system by means of diagrams, but laboratory work, even in the most exceptional cases, is now absolutely essential, and in this, as in most other departments, we have endeavoured to keep abreast of the times. Have you seen our new science lecture rooms and laboratories in London, at Red Lion Square?'

'No; but I am returning to town almost immediately and shall be glad to call there after lunch.'

'In that case stay and lunch with me; I am going to town this afternoon, and shall be delighted to show you over them.'

Before we arrived, a few hours later, at the new laboratories in Red Lion Square, Holborn, I had gathered that U.C.C. had had Science and other lecture rooms in London for some time past in Booksellers' Row, but that these had proved altogether inadequate for the rapidly-increasing Science section, and that a remove had been effected this autumn to premises with a floor space of nearly 10,000 feet—the new home of University Tutorial College. Figures alone convey but a poor idea of dimensions, and I was certainly surprised, a little later, to find spacious rooms, some of them fifteen yards long, lighted on two sides, and admirably adapted for laboratory work, in what, I understood, was nothing more or less than an offshoot of the Correspondence College. 'For,' said the Principal, 'the work carried on here is supplementary to our Correspondence work at Cambridge. Students scattered all over the country have experienced considerable difficulty in obtaining assistance in their practical work, and we are now able, by systematic courses of Vacation Classes and Revision Classes just before the Examinations, to provide for their wants. Formerly they were obliged to supplement our theoretical instruction by attendance at evening classes in the neighbourhood, often utterly unsuited to their special need.'

'Are there many Science students at London University?'

'Until recently the numbers have been comparatively small; but during the last two or three years there has been a marked increase, and we venture to attribute the growth in no inconsiderable measure to ourselves. Ten years ago the total number of students who passed the Intermediate Examination in Science was under fifty. At the last examination our students alone exceeded that number, and now that we have moved into better premises and fitted up larger laboratories, we expect still better results.'

'Do you admit ladies to your Practical Science classes?'

'Certainly; and their numbers have increased considerably of late. Two rooms are set apart for their special use.'

We had by this time reached our destination in Red Lion Square, pleasantly and quietly situated, far enough away from the bustle and roar of the City, and yet within easy access by train and omnibus from all parts of London. The ground floor is taken up with offices and a waiting-room. On the first floor there are two large lecture-rooms, one of which will accommodate sixty students. Comfort has evidently been considered in many details of the arrangements, especially in the selection and grouping of the desks. The requirements of the most thorough teaching are met by the ample surface of blackboard, which ranges the whole length of the walls at the back of the teacher. On the second floor is the Physics Laboratory and some smaller class-rooms. Passing on we entered the Biological Laboratory, which at first sight reminds one of a billiard-saloon. Over each of four large working benches are fixed several telescopic pendants, so that a brilliant light may be adjusted to the students' requirements and—to the London fogs. Though the benches were clean, I was informed that a few hours earlier they had been covered with dog-fish in the process of dissection. 'Here special attention has been paid to ventilation,' remarked my companion, 'and even our lady students soon overcome their objections to the "slaughter-house."' In this laboratory there is accommodation for about forty students. One blackboard, at the time of our visit, was covered with diagrams in many coloured chalks. The Chemical Laboratory is over forty feet long, and contains benches for sixty students, a special part being set aside for Bachelor of Science work. The cupboards are of polished pitch pine, and the tops of the benches of teak. There is also a multitude of clever contrivances for carrying away the waste, and smoothing the usual practical difficulties experienced in a Chemical Laboratory. Everywhere I was struck with the practical character of the apparatus, complete and up to date. In addition to the rooms I have described there are tutors' rooms, students' rooms, and smaller rooms for private tuition. On the screens were posted notices of interest to London University *alumni*.

Having been informed that the London Branch, although established so recently, had already more University students than any other college in London, I said—

'Are your operations at University Tutorial College limited to the examinations of London University?'

'Not limited to them, though the majority of our pupils are taking London degrees. During the past year candidates from U.T.C. have gained two University scholarships, and a number have passed the entrance examinations of the City and Guilds of London Institute, Professional preliminaries, and various other examinations.'

'I have had the pleasure, through your kindness, of obtaining a considerable insight into what are, I suppose, the two main branches of your work. Have you extended branches in any other directions?'

'Yes. Perhaps I might put it in this way, that we sent out tender shoots, which have become, through the amount of encouragement we have received, vigorous and thriving branches. The catalogue of our Press Warehouse now contains the titles of considerably over three hundred books, and this probably represents the widest field of our usefulness. We have started a journal devoted chiefly to London University matters, which, from the welcome it has received, must be judged to have met a decided want. Then there is the oral or resident branch of our work at Cambridge, whither considerable numbers of our correspondents betake themselves in their vacations for the purposes of revision and of strengthening any weak points in their defensive armour.'

'One more question, Mr. Briggs, if I have not already taken too much of your valuable time. Do you consider that the University of London will always remain a University only in name—a mere examining body?'

'I must ask you to excuse my entering now upon such a large question, which is at this moment, as it were, *sub judice*, except on the social and athletic side, and on that side my answer is, Not if we can help it. We live in the hope that U.C.C. may become a centre, round which shall group themselves the very parts of a healthy corporate life which are most conspicuously absent in the University of London. It is a big problem, but one worth thinking about; and if anyone with the necessary energy and leisure will come forward and take the matter in hand, we promise him our most hearty support, and all the help that can be derived from our almost perfected organisation. We have already made a slight move in this direction by our annual Reunion at the Holborn Restaurant, where about sixty London University men met for a most pleasant evening at the close of the B.A. examination this October. But it would be best that the next step should be taken by the graduates and undergraduates themselves, for the University of London has suffered long enough from the lack of some of the bonds of good brotherhood.'

I thanked the Principal for his courtesy and the time he had placed at my service, and make no apology for communicating the substance of my interview to our readers.

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FAN DRILL—FOR GIRLS.

For this drill the girls should stand to lines and half-turn. A box of fans should be placed at the end of each line with sufficient fans for that line. A series of chords are sounded for the passing of the fans and a lively tune from the 'Mikado Lancers' played while they are being passed. 1st Chord, both hands are held out in front, palms together. 2nd Chord, both hands bend straight to the child at the left. 3rd Chord, pass fans.

Before any practices can be taken in this drill a lesson or two will be needed in teaching the opening and shutting of the fans. The fan should be held between the thumb and first finger of the left hand at the left side, half-way down the side, and in the same way at the right side with the right thumb and finger; then gently push the right hand, holding the left side 'still' and firm. The 'quick' opening or shutting of the fan is one of the principal features of this drill.

To Hold the Fan:—When open the child must grasp it firmly, but loosely, letting the point be fixed in the palm of the hand.

1ST PRACTICE.—Tune: 'For He's going to Marry Yum Yum.'—*Mikado Lancers.*

Ready: 1st Chord. Fans opened.

2nd Chord. Place one side to shoulder, the other point towards teacher; the right side of fan towards child.

1. Curve arm round until fan is straight across chest under chin.

2. Back to position.

Repeat slowly once through tune, teacher counting four at the end of tune. 'Change.' Repeat practice more quickly.

2ND PRACTICE.—Tune: 'So Please You, Sir.'—*Mikado.*

Ready: Hold fans down on knees open, with front outside.

Extend arms full length, thumbs on top of fan.

1. Bend back, bringing edge of fan to floor as if scooping.

2. Lift them up to chest.

Repeat once through the tune slowly, then at 'Change,' once through quickly. At one the child should raise on her toes, and at two, when bringing the fan to chest, should fall back on heels.

3RD PRACTICE. Tune: 'The Flowers that Bloom in the Spring.'—*Mikado.*

Ready: Fans open behind heads, slightly bending the sides forward to form a bonnet; the hands should hold the side near to each ear.

1. Bend toward floor, looking there.

2. Upright, looking at teacher.

Repeat through tune, and change as in previous practices.

4TH PRACTICE. Tune: 'Bogie Man.'

Ready: Fans behind heads, as in 3rd Practice.

1. Curtsey to the left.

2. Upright, facing teacher.

3. Curtsey to right.

4. Upright, facing teacher.

Repeat and change.

5TH PRACTICE. Tune: Chorus of 'Peek-a-Boo' from *Hans the Boatman*, by Arnold.

Ready: Fans open in front of face, the open laths level with eyes. In this exercise the children must smile, and at the words 'Oh, you rascal,' bring the fans smartly down against their knees and quickly back to position.

1. Peep to the left of fan.

2. Peep through laths at teacher.

3. Peep to the right of fan.

4. Peep through at teacher.

Continue repeating to end of chorus. May be sung twice.

6TH PRACTICE. Tune: 'White Wings,' by Banks Winter.

Ready: Fans in position as for 1st Practice, left hand on hip. Step-dance through tune.

7TH PRACTICE. Fan Song: Either 'The Japanese Fan' or 'Three Little Maids from School.'

Children pass fans back in the same way as at the beginning of drill, and step-dance back to classes.

RECENT INSPECTION OF A VILLAGE SCHOOL.

THE school is a small mixed one, in a country district in the West Riding of Yorkshire, in the neighbourhood of Doncaster. As the population of the school district is under 300, and the average attendance less than 40, the special grants under Articles 104 and 105 of the Education Code were allowed. The staff consists of a master, and a mistress for sewing. The good grant was obtained for Geography, Discipline, and Drawing.

THE INFANT CLASS.

This was taken in two divisions, Upper and Lower. In the Upper Division the children, some of whom were above seven years of age, read a few lines each from 'The Queen's Primer,' No. II. Some were required to read backwards to test if they were reading by rote. Each child copied one line from the same reading book, and worked the following sums on a slate:—

(1) Add 76, 10, 34, and 12.
(2) Add 130, 42, 653, and 184.
(3) From 106 take 42.

ANSWERS.—(1) 132; (2) 1,009; (3) 64.

In the Lower Division the infants read from Nelson's large reading sheets, and had exercises in Word-building, such as *an*, *can*, *came*, *come*, etc. They wrote the letters *a*, *s*, *k*, *e*, *d*, from a copy written on the blackboard. They also added up on slates 3 and 1, and 2 and 3.

In Mental Arithmetic the two divisions were examined together, and such questions were asked as the following:—

How many feet have three boys?

How many are 2 and 3 and 4?

I had ten apples; I ate two, and gave four away; how many had I then?

How many are twice 9?

The children were also questioned on the Camel and the Whale.

STANDARD I.

Reading.—This was heard from Nelson's Royal Reader, No. 1. and the Royal Atlas Reader. No meanings of words were asked.

Writing.—Two lines were copied from the Standard I. Reading book. The lines to be transcribed were different for each child.

Arithmetic.—The following sums were read out slowly by the Inspector and worked on slates:—

1. Add together 319, 7, 65, 470, 195, and 83.
2. From 703 take 95.
3. From 800 take 195.
4. I had 49 apples in one basket and 170 in another. I gave away 84 apples. How many had I then left?

ANSWERS.—(1) 1,139; (2) 608; (3) 605; (4) 135.

Mental Arithmetic.—How many halfpennies in one shilling? What are 6 times 9? In three shillings how many threepences? How many days are there in 3 weeks? What is a florin, a crown, a guinea, etc.?

Recitation.—The piece recited was 'Mary's Little Lamb.' The children were questioned on the meanings of words.

Geography.—What are the Cardinal Points?

What is a plan?

What is a picture?
What is the mariner's compass for?
Where does the needle point to?
Point out a river. Show its source, its mouth.
What is an island? Point one out.
Show a bay on the map, a cape, etc.

STANDARD II.

Reading.—Two books were used, the Royal Atlas Reader, No. 2, and Nelson's Royal Reader, No. 2, and each child read about a dozen lines from one or other of them. Meanings of words were asked.

Writing.—A passage was dictated from the Royal Atlas Reader, page 70:—

'We hope nothing like this will happen to the camels in the picture before us, but that before many days they will come to an oasis. There they will find water, for an oasis is a green spot in the sea of sand, with one or more springs of water under a group of palm trees.'

Children with three mistakes were allowed to pass.

Arithmetic.—The sums were slowly dictated by the inspector, and then worked on slates.

1. Add 90,130, 18, 7,654, 126, 75,011, and 9,895.
2. From 40,013 take 9,107.
3. Multiply 94,876 by 390.
4. Divide 79,604 by 9.

ANSWERS.—(1) 182,834; (2) 30,906; (3) 37,001,640; (4) 8,844 + 8.

Mental Arithmetic.—How many pence for 6s. 9d.?
How many for 12s. 3d.?
How many shillings in £4 17s.?
What are four books worth at 3s. 6d. each?
In two guineas how many shillings?
How many minutes in four hours?
What is left out of half-a-crown after paying away 1s. 9½d.?
What are 12 times 7?

Geography.—What are the names of the Continents?
What is a strait? A gulf? A table-land?
Point out on the map a tributary, a mountain, a lake, a city.
What part of the sky is the sun in at midday?
Point out Yorkshire.
What county is to the north of it, etc.?

Recitation.—The poem recited was 'Lucy Gray.'
Who wrote this poem?
What do you know about Wordsworth?
What is *oft*? What is *wild*? *Solitary*?
What is meant by *human door; fawn; lantern; Minster clock; Faggot band; Mountain roe; Wretched parents; Furlong*? etc.

STANDARD III.

Reading.—This was heard from the 'Royal Reader,' No. 3, and 'Stories from English History.' The inspector was very particular about the children minding the stops, and about their style of reading, which he said should be as natural as ordinary talking.

Writing.—About six lines were dictated from page 164 of the 'Royal Reader,' No. 3.

'When a herd of elephants moves about in the forest, the oldest of the herd goes first. The young elephants and their mothers are put in the middle of the troop, where they are safest. Then all march along with a great trampling noise, the boughs of the trees bending and breaking before them.'

Children with three mistakes were allowed to pass.

Arithmetic.—This was worked from cards partly printed in words.

1. Divide 4,845,240 by 86.
2. Add together the following: £9 14s. 8¾d., £170,004 6s. 11½d., £806 3s. 1¼d., £406 13s. 9½d., £7,140 10s. 9½d., and 5 half-crowns.
3. Subtract £4,017 12s. 9½d. from £50,000 1s. 3d.
4. I had in my purse three five-pound notes, and paid away £1 14s. 9d., £2 17s. 11½d., and £4 2s. 6d. How much would be left?

ANSWERS.—(1) 56,340; (2) £178,368 1s. 10¼d.; (3) £45,982 8s. 5½d.; (4) £6 4s. 9½d.

Mental Arithmetic.—In 3 lb. of tea how many ounces?
What cost 11 yards of cloth at 4s. 6d. per yard?
In 24 hours how many minutes?
What number of yards in the length of a mile?
What is a guinea; a crown; a half-crown, and a florin?
Repeat the table of the measure of time, etc.
How many yards of ribbon at 6½d. a yard for 4s. 4d.?

Recitation.—The piece recited was 'The Complaints of the Poor.'
Who wrote this? Is he alive now?
What are *locks*? What is *charity*?
Explain *loitered, chill, parish.*
Who asked why the poor complained?
What answered him?
What does *silently* mean?
Put the last verse into prose.

Geography.—Questions were asked on England and Wales, and particularly on Yorkshire.
What island is this? (pointing to the Isle of Wight).
Show me Anglesey.
What river is this? (Ouse).
Find York and Leeds.
What is made at Leeds?
Point out Doncaster.
Name some towns on the Yorkshire Ouse.
Where are knives and tools made?
Where is cotton spun and woven?
Name some of the bays on the South of England.
What is the chief seaport in Yorkshire?
What is made at Birmingham?
Where is the Pennine Range?
What river rises in the Cotswold Hills?

STANDARD IV.

Reading.—The Inspector brought a book strange to the children, but of about the same difficulty as the class readers. The children were expected to read it with intelligence.

Writing.—The following passage was dictated from a *Fifth* Standard Reader:—

'The Russians are a quiet and simple people, devoted to their Emperor, whom they call "Great Father." The people are not so well taught as those in the rest of Europe, though they have lately made very great improvement. The upper classes are rich, intelligent, and polished in manners. They live in fine houses, and dress gaily, making great use of furs. The peasantry are poor and extremely ignorant.'

Arithmetic.—This was worked from cards partly printed in words. The following is a typical specimen:—

1. Multiply £863 17s. 10¼d. by seventeen.

2. Divide seventeen shillings and threepence halfpenny by seventy-three.

3. In eighty-five thousand and eighty minutes how many weeks, etc. ?

4. If apples are bought at the rate of ten for a penny, and sold at six for a penny, how much is gained on the sale of 6,000 ?

ANSWERS.—(1) £1,4686 3s. 6½d. ; (2) 2¾d. + 27 ; (3) 8 weeks 3 days 2 hours ; (4) £1 13s. 4d.

Mental Arithmetic.—What are the aliquot parts of £1 ? 9½ yds. at 3s. per yard.

Take half a thousand from a quarter of a million.

If a ship sails with 68 passengers and takes 30 days on the voyage, how many gallons of water should it have to allow each passenger a quart each day ? 510.

What quantity of cloth at 5s. a yard can I buy with £10 ?

How many square inches in eight feet ? etc.

Recitation.—Standards IV. and V. were heard together, the piece prepared being Macaulay's 'Spanish Armada.' The children were questioned minutely on the allusions and the meanings of words and phrases.

Geography.—This subject also was taken with Standard V.

Name the principal rivers in Scotland.

In passing from Newcastle-on-Tyne to the Isle of Wight by sea, what capes and what bays should I pass ?

What rivers flow into the Irish Sea ?

What are the divisions of Australia ?

What countries would a vessel pass by on a voyage from Portsmouth to Constantinople ?

What are the chief places in the Isle of Man ?

What do you know about the River Volga ?

What mountains are in France ?

Where is Suez ?

STANDARD V.

Reading.—The Inspector brought the *Yorkshire Post* of the day, and each scholar was required to read a few lines from an article on 'Cheese and Butter Making.' A few questions were asked on the meanings of the words.

Writing.—The following story was read out slowly by the Inspector, and the children had to write it from memory :—

'Sir Isaac Newton, the great philosopher, was remarkable for his absence of mind. One morning his servant man went into his study, and found him busily employed with his books. He told his master that he had brought in his breakfast, which was all ready except an egg, which Sir Isaac said he would boil for himself in a few minutes. On his servant's return in about half an hour, he found his master standing in front of the fire with the egg in his hand, and his watch boiling in the saucepan. He did not discover his mistake until it was pointed out to him by his servant.'

Arithmetic.—Cards partly printed in words were used. The following were among the sums they contained :—

(1) Make a bill for 14 yds. at 2s. 8d. per yd., 24½ yds. at 5s. 6d. per yd., 16¾ yds. at 2s. 4d. per yd., 3 dozen and 3 yds. at 1s. 4d. per dozen yds.

(2) What cost, 38 quarters 5 bushels 1 gal. at 37s. 4d. per qr. ?

(3) What length of telegraph wire will be required between two post-offices that are 9 miles 7 fur. 35 pls. 4 yds. apart, there being 22 wires side by side the whole length ?

(4) What is the rent of a house for 7½ years, if the rent for three-quarters of a year is £14 12s. 6d. ?

(5) From ¾ + ⅔ take ⅚.

(6) Find the value of 11,340 tons, each ton costing £1 13s. 9d.

ANSWERS.—(1) £1 10s. 8d. + £6 14s. 9d. + £1 19s. 1d. + 4s. 4d. = £10 8s. 10d. ; (2) £72 2s. 7d. ; (3) 386,683 yds., or 219 miles 5 fur. 26 pls. ; (4) £146 5s. ; (5) ¾ ; (6) £19,136 5s.

Mental Arithmetic.—One thousand pence is how much in £ s. d. ?

In 4 last months of the year, how many days ?

500 yards at 2s. 6d. per yard.

Interest on half a year at 2½ per cent.

What cost 20 dozen at 9½d. a dozen ?

How many days in 3 years ?

900 papers at ½d. each.

300 books at 7s. 6d. each.

Recitation and *Geography*, as already stated, were taken by Standards IV. and V. together.

The grant for singing was paid on eight songs being learnt during the year. Two of them were sung before the Inspector on the day of examination.

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SKETCHES OF MODERN EDUCATIONAL REFORMERS.

I.—ARNOLD OF RUGBY.

BY THOS. CARTWRIGHT, B.A., B.SC. (LOND.),
Author of 'Mental Science and Logic for Teachers.'

THOMAS ARNOLD, the prince of schoolmasters, was born on June 13th, 1795, at West Cowes, Isle of Wight. Miss Delafield, his maternal aunt, had charge of the earlier part of his education. In 1803 he went to Warminster School, and, in 1807, was removed to Winchester, remaining there until 1811, when he proceeded to Oxford, being elected a scholar of Corpus Christi College ; he became a Fellow of Oriel in 1815, and in 1815 and 1817 won the Chancellor's prize for University essays, both Latin and English.

Of his early tastes we need only say that they were in the direction of Geography, Geology, and History, and, later, on a strong liking for Aristotle, Plato, and Thucydides was developed. As to the eminent men with whom he consorted at Oxford we need not speak, except to say that each and every one valued his friendship and acknowledged his excellence of character.

In 1818 he was ordained deacon at Oxford. In 1819 he removed to Laleham, near Staines, where he settled with his mother, aunt, and sister, and undertook the preparation of seven or eight young men for the Universities, in which occupation he was engaged, until his removal to Rugby, nine years later.

On August 11th, 1820, he married Mary, youngest daughter of the Rev. J. Penrose, Rector of Fledborough, Notts, and father of one of his dearest friends. At Laleham six of his nine children were born. This period of his life was a very happy one, and he

found real pleasure in the work of tuition. In fact, it is here that we find conclusive proof of the fact that Arnold was a born teacher, delighting in the society of young people, and looking upon his work as in no measure a task. That his views were sound is evident from the following :—'The difference between a useful education and one which does not affect the future life rests mainly on the greater or less activity which it has communicated to the pupil's mind ; whether he has learned to think or to act, and to gain knowledge by himself, or whether he has merely followed passively as long as there was someone to draw him.'

August, 1827, found him planning a removal from Laleham to a less expensive neighbourhood in which to carry on his tuition ; but at this juncture Dr. Wooll who had ruled Rugby for twenty-one years, resigned, and Arnold, with many misgivings and somewhat late in the day, sent in his papers as a candidate for the vacant position. Dr. Hawkins, Provost of Oriel, wrote of him that, if he were elected to the headmastership of Rugby, 'he would change the face of education all through the public schools of England,' a prophecy which after events fully justified. Such praise from such a source was naturally largely instrumental in bringing about the election of its recipient, and, as a matter of fact, in December, 1827, Arnold became, what he will ever remain, to wit—'Arnold of Rugby.' In June, 1828, he was ordained Priest, and in April and November took the degrees of B.D. and D.D. In August, 1828, he entered on his new office.

In the early morning of June 12th, 1842, after a busy day spent in preparation for removal to Fox How in Westmoreland—where he delighted to spend his leisure—and in the entertainment of old pupils, he was suddenly seized with angina pectoris, and, to the great grief of his family and friends, in a few short hours that fell disease had laid him low. Within the last few months of his life he had been elected Professor of History to Oxford, and had already delivered his Inaugural Lecture, and planned out a goodly portion of his work for the future. It is interesting to note that he valued this new position largely because of his desire to use it as a vantage ground from which to stem the tide of that tractarian movement which Newman and Pusey were destined to make so formidable. As a man he was liberal-minded to a fault, ever ready to use both pen and purse in promoting his enlightened views, nor did he shrink from a persevering advancement of his views, even when abuse and loss of friendship seemed to be the inevitable harvest ; but we are mainly concerned with the schoolmaster, and must hasten to see what message this excellent craftsman has left for you and for me.

In the first place he was animated with sympathy profound and far-reaching, and this was the great force which moulded his school. 'If he should turn out ill,' he said of a scholar to one of his masters, 'I think it would break my heart.' And again, 'If ever I receive a new boy from his father without emotion, I should think it was high time to be off.'

Self-effort was uniformly encouraged and expected. 'It was always his wish,' says Dean Stanley, 'that his pupils should form their opinions for themselves, and not take them on trust from him.' 'I call that the best theme,' he said, 'which shows that the boy has thought and read for himself.' To teach by questioning and to withold information, except as a reward for effort, was another principle which aimed at the awakening of the intellect of each individual boy.

He would tolerate no outside interference in the management of his school, and he was equally determined to have no meddling with his private occupations. Compulsory extraneous duties would have received scant courtesy at the hands of Dr. Arnold. 'He, from the first, maintained that, in the actual working of the school, he must be completely independent, and that their remedy, if they were dissatisfied, was not interference, but dismissal. On this condition he took the post, and any attempt to control either his administration of the school, or his own private occupations, he felt bound to resist as a duty not only to himself, but to the master of every foundation school in England.' On one occasion the Earl Howe, one of the trustees of Rugby, wrote to him, asking that he would declare if he were the author of an article on Dr. Hampden in the *Edinburgh Review*. Dr. Arnold wrote as follows :—'Your lordship asked a question which the common usage of society regards as one of delicacy—justified, I do not say, only by personal friendship, but at least by some familiarity of acquaintance. Is was because no such ground could exist in the present case, and because I cannot and do not acknowledge your right officially, as a trustee of Rugby School, to question me on the subject of any real or supposed writings on matters wholly unconnected with the school, that I felt it my duty to decline answering your lordship's question.'

Earl Howe, in consequence of this, moved a vote of censure on Arnold, which was happily lost, as its passing would undoubtedly have cost the Trustees their Head Master.

Equally fearless and consistent was he with respect to expulsion—a practice which wrought much good in his school, enabling him to minimise corporal punishment. Abolition thereof he considered both undesirable and impossible, a fact which shows how far remote from the mawky sentimentalism of these *fin de siècle* times was this broad-minded citizen and pedagogue. 'Till a man learn that the first, second, and third duty of a schoolmaster is to get rid of unpromising subjects, a great public school will never be what it might be, and what it ought to be.' 'Undoubtedly it would be a better system if there was no evil ; but evil being unavoidable, we are not a gaol to keep it in, but a place of education where we must cast it out, to prevent its taint from spreading.' Flogging he endeavoured to make as infrequent as possible, by reserving it as a *dernier ressort* for cases of moral delinquency. He shows, however, the fallacy of the 'sanctity of person' argument in the following pithy words :—'I know well of what feeling this is the expression : it originates in the proud notion of personal independence, which is neither reasonable nor Christian, but essentially barbarian. It visited Europe with all the curses of the Age of Chivalry, and is threatening us now with those of Jacobinism. At an age when it is almost impossible to find a true, manly sense of the degradation of guilt or faults, where is the wisdom of encouraging a fantastic sense of the degradation of personal correction ? What can be more false, or more adverse to the simplicity, sobriety, and humbleness of mind, which are the best ornaments of youth and the best promise of a noble manhood ?' Dr. Arnold made a great point of personally teaching the Sixth Form,

and of so impressing himself upon them as to make them capable of understanding what his desires were with regard to general school government. He anxiously endeavoured to enlist the sympathies of these boys, and he looked upon their co-operation as a vital element in his system of government. 'When I have confidence in the Sixth there is no post in England which I would exchange for this; but if they do not support me I must go.'

That a teacher should ever be a learner was another cardinal article of this great pedogogue's faith. 'I am sure I do not judge of them, or expect of them, as I should, if I were not taking pains to improve my own mind.' His common-sense was also apparent in the School Councils which were held every three weeks wherein were discussed new plans and methods. Opportunity was taken here as elsewhere to show that it was the wish of Dr. Arnold—as it should be of every Head Master—to bring out the individuality and self-assertiveness of his assistants. 'Nothing delights me more,' said he of one of his colleagues, 'than to think that boys are sent here for his sake rather than for mine.'

On every occasion he consulted them as to new departures, and he was anxious that each master should have 'a horse of his own to ride.'

Implicit trust was placed in the honour of the boys, especially those in the Sixth. 'If you say so, that is quite enough—of course, I believe your word'; and this magnanimous policy so leavened the minds of the boys that it was generally felt to be 'a shame to tell Arnold a lie; he always believes one.'

By introducing Modern History, Modern Languages, and Mathematics into the work of the school the great doctor showed himself anxious to improve the curriculum, and in this, as in all things scholastic, we have to express our admiration of the foresight which prompted the action. Moreover, into the classics he introduced philology, and thus gave zest to the study of Greek and Latin. His subjects for composition were always such as to be interesting *per se*, and, in all matters referring to the curriculum, Dr. Arnold endeavoured to steer as clear as possible of the dry-as-dust mode of procedure. Let it not be thought that this model master had no troubles. He was frequently quite despondent, so great were the checks which his schemes received. His great difficulty was one with which we are all confronted, more frequently than is pleasant, viz., how to neutralise the ill-effects of that *camaraderie* which causes the evil example of a popular boy to contaminate a whole school. So convinced was he of the power of this evil influence that he says: 'How to meet this evil I really do not know; but to find it thus rife after I have been so many years fighting against it, is so sickening, that is very hard not to throw up the cards in despair, and upset the table. But then the stars of nobleness which I see amidst the darkness are so cheering, that one is inclined to stick to the ship again, and have another good try at getting her about.' That he had no inflated ideas of his success is clear, for he says: 'I came to Rugby full of plans for school reform; but I soon found that the reform of a public school was a much more difficult thing than I had imagined.' Also, 'I dread to hear this called a religious school. I know how much there is to be done before it can be really called so.' Further, 'With regard to one's work, be it school or parish, I suppose the desirable feeling to entertain is always to expect to succeed, and never to think that you have succeeded. Once he had spoken sharply to a plodding pupil. 'Why do you speak angrily, sir? Indeed I am doing my best.' This Arnold always remembered. 'I never,' said he, 'felt so much ashamed in my life; that look and speech I have never forgotten'; and, in speaking years after of another plodder, he said—'I would stand to that man hat in hand.' Other pithy and pregnant remarks were—'It would be a great mistake if I were to try to make myself here into a Pope.' 'When I cannot run up the library stairs I shall know that it is time for me to go.' 'I always think,' said he, 'of that magnificent sentence of Bacon—"In this world God only and the angels may be spectators."' 'Stand still and see the salvation of God was true advice to the Israelites on the shores of the Red Sea, but it was not the advice which was needed in ordinary circumstances; it would have been false advice when they were to conquer Canaan.'

But I must forbear, hoping that enough has been already said, or suggested, to whet the appetite for the study in detail of the life and policy of the subject of our sketch—for such is the aim of this and other sketches of modern educationists which may from time to time appear in this place.

—o—

QUERY COLUMN.

Geometry.

MYSTIFIED.—(*From Wallace Stewart's Text Book of Light, pages 11, 12.*)

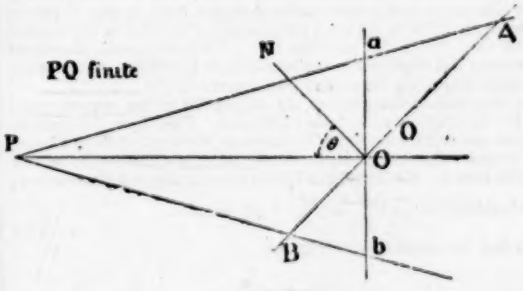


Fig. 1.

The Intensity of Illumination of a surface varies with angle of Incidence of Light (Fig. 1).

Let PAB denote pencil of light emanating from point P, and incident upon surface AB at angle PON.

Imagine surface AB to be rotated round O into position A^1B^1 where it is at right angles to PO.

Then, if Q denotes quantity of light emitted by pencil PAB, then, intensity of illumination of AB

$$= \frac{Q}{\text{Area of AB}} = \frac{Q}{A} = I.$$

After rotating AB into position A^1B^1, the same quantity of light Q, falls upon smaller area ab. ∴ Intensity of Illumination of this area

$$= \frac{Q}{\text{Area of } ab} = \frac{Q}{A_1} = I_1$$

It can, however, be shown that $A_1 = A \text{ Cos } BOB' = \angle \text{ Cos}$ PON, and ∴ $I = I_1$ Cos PON.

How can it be proved that area denoted by A_1 = area denoted by A × Cos of angle between the two surfaces?

(Will not A_1 and A be circular areas, with diameters AB and ab respectively?)

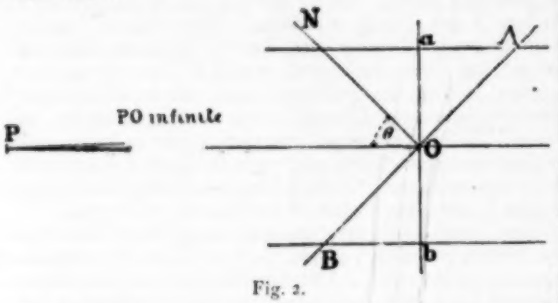


Fig. 2.

In Fig. 2 P is supposed to be so far from the screen as to be sending a beam of parallel rays to the screen. If the beam is cylindrical, then *ab* represents a circle having an area $= (aO)^2 \pi = a^2 \pi = A_1$.

But AB, which represents an oblique section of the cylinder of rays, is not a circle but an ellipse, whose major axis is AB, and minor axis at O is equal to *ab*, being the diameter of the cylinder.

Let AB = 2 c and *ab* = 2 a.

Then area of ellipse = a c π = A.

$$\text{Now } C = OA = \frac{Oa}{\text{Cos } a\,OA} = \frac{a}{\text{Cos } a\,OA} = \frac{a}{\text{Cos PON}}$$

$$\text{Therefore, } A = \frac{A_1}{\text{Cos PON}}.$$

Therefore, A Cos PON = A_1

And, therefore, in this case $I = I_1$ Cos PON.

If P is considered to be at a finite distance from the screen at O, the beam of rays will be conical. (Fig. 1.) Taking it as a right circular cone, the section ab made by the plane perpendicular to the axis PO will be a circle, whose area $A_1 = \pi a^2$. The section made by the plane AB will be a different ellipse from that in the previous case. In the first place, the centre of the ellipse is not at O, but at O', the middle point of AB. Therefore, the diameter of the circle ab at P at right angles to AB is not the minor axis of the ellipse, but a chord parallel to the minor axis, which is at O'. Hence the diameter ab is less than the minor axis of the ellipse, and supposing ab in this case equal to ab in the first case, then it can be shown (if the angle PON is the same in both cases) that AB in this case is greater than AB in the previous one. For two reasons, therefore, the section AB is greater in the second than in the first case; hence the result quoted by 'Mystified' is not correct.

To find exactly the area of the ellipse AB in the second case. Let PO = b, Ob = a, bOB = PON = θ. Then from the triangle OPb we can find the angle PbO; therefore, the angle OBb is known, and we know that Ob = a; hence the triangle OBb can be solved and OB found. Similarly, OA can be found; hence AB is known, and therefore $OO' = \frac{AB}{2} - OB$. Call this S.

To find the minor axis. (Fig. 3.)

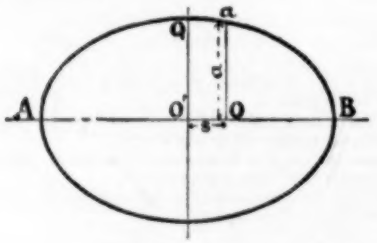


Fig. 3.

Equation of ellipse. $\frac{x^2}{(O'B)^2} + \frac{y^2}{(O'Q)^2} = 1$. But $O'B = \frac{AB}{2}$

Call this a_1. And let O'Q be represented by *c*.

Then considering the point *a*, we have $x = s$, $y = a$. Therefore $\frac{s^2}{a_1^2} + \frac{a^2}{c^2} = 1$.

Therefore, $c_1^2 (s^2 - a_1^2) = -a_1^2 a^2$.

Hence $c_1^2 = \frac{a_1^2 . a^2}{a_1^2 - s^2}$

The axis of the ellipse is thus found, so the area of the figure can easily be calculated.

R. JONES.—Draw AE parallel to CD.

$$\text{Then } AB^2 = AE^2 + EB^2$$
$$= CD^2 + (DB - EB)^2$$
$$= (2OD)^2 + (DB - CA)^2.$$

Now OD = Radius, for which put R,

$$\text{and } \frac{CA}{CO} = \tan COA$$
$$= \tan 30°$$
$$= \frac{1}{\sqrt{3}}$$

$$\therefore CA = \frac{1}{\sqrt{3}} CO$$
$$= \frac{1}{\sqrt{3}} R,$$

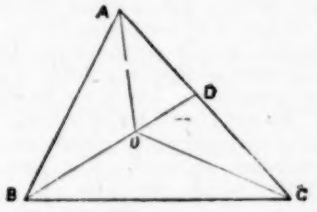
$$\therefore AB^2 = (2R)^2 + (3R - \frac{1}{\sqrt{3}} R)^2$$
$$= 4R^2 + 9R^2 - \frac{6}{\sqrt{3}} R^2 + \tfrac{1}{3} R^2$$
$$= 13\tfrac{1}{3} R^2 - 2\sqrt{3}\, R^2$$
$$= R^2 (13\tfrac{1}{3} - 2\sqrt{3})$$
$$\therefore AB = R\sqrt{13\tfrac{1}{3} - \sqrt{12}}$$
$$= R\sqrt{13.3 - 3.4641 +}$$
$$= R\sqrt{9.8692 +}$$
$$= R \times 3.1415 +$$

Now Half-Circumference = Radius multiplied × 3·14159.

∴ AB is approximately equal to half the circumference.

The method is sufficiently accurate for all practical work, because the result is only wrong by about the $\frac{1}{100000}$ part.

TYKE.—Prove by Euclid Book VI. that 'The straight lines which bisect the angles of any triangle all pass through the same point.'



Let ABC be a triangle.

Bisect the angles at A and C by straight lines meeting at O.

Join BO.

Then BO shall bisect the angle at B.

Produce BO to meet AC in D.

Proof.—Then AB is to AD as BO is to OD,

And CB is to CD as BO is to OD (VI. 3),

∴ AB is to AD as CB is to CD (V. 11),

That is, AB is to BC as AD is to CD (V. 16).

∴ The straight line BD bisects the angle at B. (VI. 3.)

Q. E. D.

Arithmetic.

CELIA.—A train whose length is 176 feet is moving at the rate of 45 miles an hour, and overtakes a second train going at the rate of 30 miles an hour. How long does the first train take to pass a passenger in the second train? If the first train take a quarter of a minute to pass the second train completely, find the length of the second train.

(*a*) miles. feet. hour.
$(45 - 30) : 176 :: 1 :$ Time

$$= \frac{\overset{2}{\cancel{176}} \times \cancel{60} \times \overset{4}{\cancel{60}}}{\cancel{15} \times \overset{3}{\cancel{3520}}} \text{ sec.}$$

$= \underline{8}$ seconds. Ans.

(*b*) hours min. miles.
$1 : \frac{1}{4} :: (45 - 30) :$ Length of both trains.

$$= \frac{\overset{330}{\cancel{15}} \times \overset{4}{\cancel{3520}}}{\cancel{60} \times \cancel{4}} \text{ feet.}$$

$= 330$ feet;

$\therefore$ Length of second train $= (330 - 176)$ feet.
$= \underline{154}$ feet. Ans.

CELIA.—Two travellers start from different points 360 miles apart, and walk towards each other. One walks at the rate of five miles an hour, and the other at four miles an hour. Where will they meet?

$\therefore$ Distance of meeting-place from starting point of first

$= \frac{5}{5 + 4}$ of 360 miles

$= \frac{5}{9}$ of 360 miles

$= \underline{200 \text{ miles}}$. Ans.

F. S.—A starts in pursuit of B, who has had a minute and a quarter start. He overtakes and passes B, who at once stops. After proceeding further for 275 yards, A returns in pursuit of B, who at once starts off back again. If B be overtaken at the starting place, find where he was first overtaken, his speed being 7 miles an hour. (*Cambridge Previous Examination*, 1890.)

Distance gone by B in $1\frac{1}{4}$ min. $= \frac{7 \times 1760 \times 1\frac{1}{4}}{60}$ yards

$$= \frac{7 \times \overset{22}{\cancel{176}} \times \overset{44}{\cancel{5}}}{\cancel{6} \times \cancel{4}} \text{ ,,}$$

$= \frac{770}{3}$ yards.

Time it takes A to go the distance from starting-point to the place where B is overtaken = time it takes B to go (the distance — $\frac{770}{3}$ yards),

Also, time it takes B to go the distance back = time it takes A to go (the distance + 275 yards).

$\therefore$ Distance — $\frac{770}{3}$: distance :: distance : distance + 275,

That is, distance — $\frac{770}{3}$ — distance : distance :: distance — distance — 275 : distance + 275,

$-\frac{770}{3}$: distance :: — 275 : distance + 275,

$\frac{770}{3}$: distance :: 275 : distance + 275,

Distance × 275 = (distance + 275) × $\frac{770}{3}$,

Distance × 5 = (distance + 275) × $\frac{14}{3}$,

5 times distance = $\frac{14}{3}$ times distance + $(275 \times \frac{14}{3})$,

5 times distance — $\frac{14}{3}$ times distance = $\frac{3850}{3}$,

$\frac{1}{3}$ of distance = $\frac{3850}{3}$,

$\therefore$ Distance = $\underline{3,850 \text{ yards}}$. Ans.

CONFIDENCE.—Simplify :—

$$\frac{\frac{5}{6} - \frac{1}{2} \times \left(\frac{2}{3} - \frac{1}{2}\right) \times \frac{6}{7} \times \left(\frac{4}{5} + \frac{1}{2}\right)}{\frac{3}{4} \times \left(\frac{7}{8} - \frac{1}{2}\right) - \frac{1}{3} \times \left(\frac{1}{7} - \frac{1}{10}\right)} \quad (\textit{Ricks.})$$

$$= \frac{\frac{5}{6} - \frac{1}{2} \times \left(\frac{2}{3} - \frac{1}{2}\right) \times \frac{6}{7} \times \left(\frac{4}{5} \times \frac{1}{2}\right)}{\frac{3}{4} \times \left(\frac{7}{8} - \frac{1}{2}\right) - \frac{1}{3} \times \left(\frac{1}{7} - \frac{1}{10}\right)}$$

$$= \frac{\frac{5}{6} - \frac{1}{2} \times \frac{1}{\cancel{6}} \times \frac{\cancel{6}}{7} \times \frac{13}{10}}{\frac{3}{4} \times \frac{3}{8} - \frac{1}{3} \times \frac{3}{70}}$$

$$= \frac{\frac{5}{6} - \frac{13}{140}}{\frac{9}{32} - \frac{1}{70}}$$

$$= \frac{\frac{350 - 39}{420}}{\frac{315 - 16}{1120}}$$

$$= \frac{\frac{311}{\cancel{420}\ 3}}{\frac{299}{\cancel{1120}\ 8}}$$

$$= \frac{2488}{897}$$

$= 2\frac{694}{897}$. Ans.

H. T.—Calculate the numerical values of :—

(*a*) Cotan 54° 45′ Cot. 157° 48′.

(*b*) Sin. 30° 39′ — Sin. 78° 49′.

(*a*) Cot. 54° 45′ Cot. 157° 48′

= Cot. 54° 45′ × — Cot. (180° — 157° 48′)

= — Cot. 54° 45′ × Cot. 22° 12′

$= -\frac{\text{Cos. } 54° 55'}{\text{Sin. } 54° 49'} \times \frac{\text{Cos. } 22° 12'}{\text{Sin. } 22° 12'}$

$= -\frac{\cdot 5771452}{\cdot 8166416} \times \frac{\cdot 3778408}{\cdot 9258706}$

$= -\frac{1442863}{\cancel{5771452}} \times \frac{472301}{\cancel{3778408}}$
$\quad\quad \cancel{8166416} \times \cancel{9258706}$
$\quad\quad 4629353$
$\quad\quad 510401$

4629353	1442863
510401	472301
4629353	1442863
18517412	4328589
4629353	2885726
23146765	10100041
2362826400553	5771452

) 681465377630 (·2884
472565280106
208900357652 40
189026112044 24
1987424560816 0
1890261120442 4
97163440373 6

= — ·2884 + Ans.

(*b*) Sin. 30° 39′ — Sin. 78° 49′

= ·5097924 — ·9810116

= — ·4712192. Ans.

ANON.—Simplify :—

$$\frac{4 + \frac{15}{3 + \frac{2}{9 + \frac{7}{15}}}}{4 + \frac{15}{3 + \frac{2}{9 + \frac{7}{15}}}}$$

$$= 4 + \cfrac{15}{2 + \left(\frac{7}{1} \times \frac{15}{139}\right)}$$

$$= 4 + \cfrac{15}{2 + \frac{105}{139}}$$

$$= 4 + \cfrac{15}{\left(\frac{2}{1} \times \frac{139}{261}\right)}$$

$$= 15 \div 4\,\frac{139}{261}$$

$$= \frac{15}{1} \times \frac{261}{1183}$$

$$= \frac{3915}{1183}$$

$$= 3\,\frac{366}{1183}$$ Ans.

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LONDON MATRICULATION.

JANUARY, 1893.

OUR PREPARATION CLASS FOR PRIVATE STUDENTS.

BY T. RUSSELL MALTBY, M.A.
Kingswood School, Bath.

(SEVENTH MONTH.)

I.—LATIN.

The following is the declension of some of the Greek nouns in Horace:—

N.,V.	*Nereis*	*Naias*	*Tros*
Acc.	*Nereida*	*Naiada*	*Troem, Troa*
G.	*Nereidis* (and *-os*)	*Naiadis* (and *-os*)	*Trois*
D.	*Nereidi*	*Naiadi*	*Troi*
Abl.	*Nereide*	*Naiade*	*Troe*
N.,V.	*Nereides*	*Naiades*	*Troes*
Acc.	*Nereidas*	*Naiadas*	*Troas*
G.	*Nereidum*	*Naiadum*	*Troum*
D., Abl.	*Nereidibus*	*Naiadibus*	*Troibus*
	So *Pieris, Paris* (in sing. only), etc.	So *Euhias, Pallas* (in sing. only), *Pleiades* (in pl. only), etc.	So *Minos* (in sing. only)
	Phyllis	*Thetis*	*Achilles*
	Phylli	*Theti*	*Achilles* (*-e*)
	Phyllida	*Thetim* (and *-in*)	*Achillem* (&*-en*)
	Phyllidis (and *-os*)	*Thetidos*	*Achilli* (*-ei* and *-is*)
	Phyllidi	*Thetidi*	*Achilli*
	Phyllide	*Thetide, Theti*	*Achille*
	So *Chloris*, etc.		So *Alyattes*

Horace, Odes IV., 9-15 (Page). *Supplementary Notes.*

Ode 9. 1. *Ne . . . credas:* final; for negative command we should have *ne credideris; interitura (esse)* with subject *verba* which has been drawn into the relative clause. 4. *Words which I utter . . . words to be wedded to. . .* 6. *The muse of Pindar and of Ceos, nor the threatening muse of Alcaeus, nor the stately muse of Stesichorus.*

10. She told her secret to the lute,
And yet its chords with passion thrill.—*Conington.*

13. There have been other thrilling histories, but for want of poetic treatment they are forgotten. 14. *Illitum: inwrought upon;* trace out this meaning. 18. Decline *Ilios.* 23. *Dauntless Hector was not the first, nor keen Deiphobus, to encounter blows for the sake of chaste wives and children.* 29. *Sepultae . . . celata:* these in sense are attributes of both *inertiae* and *virtus*, but in syntax they are divided between them; so in Odes III., 4., 18, *ut premerer sacra Lauroque collataque myrto.* 29. *Inertiae:* cowardice; account for the dative. 31. *Silebo:* transitive, as in line 21 of the last Ode; *I will not leave thee unsung, unhonoured by my pages.* 33. Trace out the meanings of *lividas.* 35. *Rerum:* obj. gen.; so *fraudis.* 36. *Temporibus:* in prose we should have *in.* 38. *Money that draws all things to itself.* 40. Not for one year, but constantly, *so often as it, a good and faithful judge, hath preferred. . . .* 42. *Flung back with lofty looks the bribes of guilty men.* 44. *Victor:* predicative; *carried its arms right through to victory.* 45. *Vocaveris:* potential subjunctive (hypothetical, with condition suppressed) in a 'modest assertion'; *you would not rightly call. . .* 52. *Perire:* another explanatory infinitive.

Ode 10. 1. *Muneribus:* causal abl. 2. *Superbiae:* dat. with *veniet*, but also to be connected in thought with *insperata; shall come to thy pride—unexpected by thy pride:* Wickham translates *shall come to thy pride though it dreams not of it.* 6. *Thou wilt say, as often as thou seest. . . .* 7. *Why had not I when still a boy the same mind that I have to-day.*

Ode 11. 1. *Superantis: getting beyond, getting over its ninth year.* 3. *Apium:* what is the gen. pl. of *apis?* 5. *Qua:* abl.; *religata:* nom.; *crines:* A. and H., sect. 59. 7. *Immolato: with the sacrifice of . . .* 12. *Vertice: in a whirling column*, abl. of manner. 13. *Noris:* final subj.; so *reddas* in 35; *advoceris:* pres. subj. in indirect question. 14. Account for the datives *gaudiis* and *tibi.* 15. *The day which divides April, the month of sea-born Venus—rightly a high day in my eyes.* 21. *Telephus, whom thou desirest, a youth dies:* subj. 18. *Illius: of the girl . . .*

Who, breathing Love's own air,
Me of myself bereft,
Who reign'd in Cinara's stead.—*Conington.*

21. *-que* joins *felix* and *facies, et* joins *nota* and *artium*, according to Page's note; *felix* agrees with *quae*, and *facies* is in apposition with *quae;* make sure of these lines. 24. *Servatura: that meant to preserve;* all the tenses are historic. 28. *Dilapsam* (not *delapsam*): *sunk away into ashes.*

Ode 14. Odes 14 and 15, with 4 and 5, contain the real purpose of this book. 1. *What zeal of the Fathers or what zeal of the Quirites, with adequate awards of honours, is to immortalise for ever thy virtues . . . O Augustus, mightiest of princes, wherever . . .* 2. *Honorum:* gen. of definition. 7. *Knowing naught of Latin law.* 14. *Maior* (*natu*). 18. *Morti liberae: to free death* might equally well mean (*lives*) *freely* (*dedicated*) *to death.* 20. *Prope qualis . . . (sic) impiger: almost as the South wind troubles . . . so is he unwearied in harassing.* 27. *Cum* with indicative; *whenever he raves and designs a terrible flood for; agris:* dat. of disadvantage. 29. *Ut:* (*so Aufidus rolls*) *as Claudius swept down . . .* 31. *By mowing down first and last strewed the ground, conqueror without a reverse.* 33. *Te:* with *praebente*, abl. abs.; *furnished by thee with troops and strategy and auspices.* 37. *Propitious after the lapse of three lustres, rendered successful the issues of war, and added . . .* 43. *Tutela:* here active, *guardian;* in 6.33 it was passive, *the guarded one.* 47. *Which, monster-breeding, howls against the far off Britons.*

Ode 15. 1. *Proelia:* (obj. of *loqui*) Caesar's victories. 2. *Rebuked me with the note of his lyre* (*warning me*) *not to . .* 5. Decline *uberes.* 7. Account for the case of *postibus* and *duellis.* 10. *Frena licentiae:* dir. and ind. obj. of *iniecit.* 15. *Porrecta* (*est*). 18. *Exiget: drive out.* 20. *Miseras:* proleptic. 24. *Prope:* here a prep. (cf. 14.20), governing *Tanain flumen.* 25. Prepare a note on *dies profesti.*

27. Our wives and children at our side,
First paying Heaven the prayers we owe,
Shall sing of chiefs whose deeds are done.—*Conington.*

30. *In strains blended with the Lydian pipes.*

Heracleidae, 866-1055 (Jerram). *Supplementary Notes.*

869. χρόνῳ μὲν . . . χάριν δέ: *at last* (after long waiting), . . .

yet still I thank thee; cf. 1029. 876. χθονός: partitive; *your lots in the land;* with ἐμβατεύσετε we should expect εἰς. 879. Literally, *but devising what clever thing did Iolaus spare.* 883. Render the πρό of προτιμῶν: *regarding first your interests.* 884. See note, and translate freely: *now that thou art his mistress and he is subjected to thy hand.* 889. ἠρχόμην: from ἄρχω; parse the word in another way. 891. *The mouth of the noble should be without deceit.* 895. *And sweet it is after all to see the good fortune of friends who before expected it not.* 901. *Thou hast a righteous way (of acting).* 902. Take ὠφελέσθαι as middle, and supply a second object σε; *it is not right ever to take from thee this (reputation), that thou honourest the gods, and he that saith thou dost not driveth close to madness, when proofs like these are shown;* look out ἔλεγχος again. 912. Notice the position of the breathing in Ἅιδα; ι is not written subscript with capitals; decline the noun. 919. *Most things have resemblances with many others.* 922. θεᾶς κείνας (ἐκείνης): dependent on πόλις καὶ λαός. 925. *With whom the spirit of violence was placed before justice.* 930. ἄελπτον (σοὶ ὁρᾶν): *unexpected for thee to see, and no less (unexpected) for him to meet with.* 931. Supply subject τόνδε. 937. Decline βρέτας. 946. *Who didst think fit to heap many an insult upon my son who is now where he is;* πολλά: cognate accusative with ἐφυβρίσαι, so τί in 948. 955. *Though seated as suppliants of the gods.* 957. Note this line. 960. ἐξειργασμένον: middle. 965. τοισδ' = τοῖσδε: *in their eyes.* 967. Notice the construction; *endured that these things should be decreed;* Synt., Sects. 107. 970. *It was then that he was wronged, in not being slain at first.* 971. *Is it then no longer a seemly thing that he should be punished?* For ἐν καλῷ compare 397. 972. *There is no one who will . . .;* ἄν with opt. equivalent to a mild future; so in 1008; cf. 977. 981. δεινόν τι καὶ συγγνωστόν; take these as agreeing with νεῖκος; *that thou hast a terrible and yet a pardonable hatred for this man, I know full well.* 990. *Caused me to labour under this disease.* 995. διώσας: from διωθέω. 997. *Knowing that thy son was . . . 999. He shall be nobly spoken of;* look up ἀκούω; τὰ ἐσθλά: adverbial; notice the τά, *his noble traits shall be made known.* 1000. ἐχρῆν: see on 959. 1001. *Being hated by these;* notice πρός with gen. and compare 682. 1004. Supply ἐμοί. 1005. *If thou hadst had my fortune.* 1007. ἤλαυνες ἄν: Why Indic.? Why Imperf.? Synt. 179. Why is εἶασας, Aor.? The protasis is in λαβοῦσα. 1010. *Though I desired it;* make sure of this passage. 1014. ἃ γ' εἶπας: *to what thou didst say;* What would be the case of the antecedent? 1016. τὰ ἐμὰ ἔχει: *my case stands thus.* 1017. λιπών; causal or conditional? 1020. *But if he were to die and I yet obey the city?* 1024. ἀπιστήσω: take the meaning *disobey.* 1029. ἐμοί: with δώσει. 1029. μείζονα: plural acc., adverbial; *more than the seeming;* χρήσῃ with ὠφελήσει. 1030. οὗ τὸ μόρσιμον: *where fate ordains.* 1036. *Proving unfaithful to this kindness, i.e.,* the kindness of Athens to the Heracleidae. 1041. Zeugma. 1042. *Evil is the home-coming that I shall give them.* 1045. μέλλετε: here with the meaning of *delay.* 1046. χρεών (ἐστί): *if you are fated to achieve safety for the city and for your descendants.* 1049. ὠφελεῖ (ἡμᾶς). 1050. *Then having slain him ye must give him to the dogs.* 1052. *That thou shalt live and cast me out again.* Parse ἐπεσκέψω, ἐφείσαθ', ἔξευξ', μέμνησο, ἠρχόμην, εἶνι, μανιῶ, δαισθείς, δαϊσθείς, ἠδ'χει, βρέτας, πλῆθι, κρατεῖ, ἐμηχανῶ, ὠφέξεις, ἠράμην, πεπυσμένοι, 'σνήσω, δείκνυσι. What constructions follow φείδομαι, ἄρχω, ἐγγύς, σύνοιδα, ἐξαιρέχομαι?

II. FRENCH.

Notes on the June Paper.

Three passages of French were given, of which *two* were to be translated by each candidate. The first is given below; the second (*L'Honneur*) contained the words *luttes* (f. *struggles*), *inouïs* (*unheard of*), *élans* (m. *outbursts*), *pesez* (*weigh*), and two or three awkward sentences, *e.g., c'est peut-être là le plus grand mérite de l'Honneur d'être si puissant, et toujours beau, quelle que soit sa source* (*Herein; perhaps, is the greatest merit of Honour, that it is so powerful, and always beautiful, whatever may be its source*), and, *La honte de manquer de tout cela est tout pour nous* (*To be ashamed to be wanting in all this is everything for us*).

The third piece (*Les Contes de Perrault*) contained the following:—

Un Homère bourgeois, a Homer of ordinary life, a parochial Homer;

s'emparer, to lay hold;

était restée confiée à, had remained in the keeping of;

épopées, epic poems;

des génies de toutes les tailles, geniuses of all sizes;

Petit-Poucet, Cendrillon, Barbe-Bleue, Belle-au-bois-dormant, Hop-o'-my-thumb, Cinderella, Blue Beard, Sleeping Beauty.

In Part II. (Grammar) seven questions were to be attempted out of nine. Many of these are based on the passages in Part I. The feminines of the following were asked for—*pêcheur, pêcheur, voleur, gouverneur, vengeur, jumeau, le duc, le comte, le marquis, le vicomte, un pair, ses héros,* and *un jour*. The answer expected in the last case was, presumably, *une journée*. Questions 3 and 9 were on numerals; number 4 is answered below. In the 5th some homonyms were to be translated—*la cour* (*the court*), *un cours* (*a course*), *tu cours* (*thou runnest*), *il court* (*he runs*), *un bâton trop court* (*too short a stick*), *une phrase trop courte* (*too short a sentence*). Question 8 began thus:—'Frame French sentences to show the difference between *que*, adverb of quantity, *que*, relative pronoun, and *que*, conjunction. Also between *leur*, personal pronoun, *leur*, possessive adjective, and *leur*, possessive pronoun.'

Every question contained exercises on verbs.

I.A. Crestow Castle appartenait autrefois à Edouard Stafford, Duc de Buckingham, qui, par son caractère hautain et indépendant, s'attira la haine du Cardinal Wolsey. Le Duc, un jour, présentait, après le dîner, et à genoux, selon la coutume, le bassin au roi, pour que celui-ci se lavât les mains. Quand le roi eut fini, et qu'il se fut éloigné, le cardinal, par manière de badinage, trempa sa main dans le bassin, tandis que le Duc était encore agenouillé. Ce dernier regarda la plaisanterie comme un affront, et, se levant alors, jeta toute l'eau dans les souliers du cardinal, qui, piqué au vif, menaça le Duc de *s'asseoir sur les bords de son vêtement.*

Le lendemain, le Duc vint à la cour avec un pourpoint très écourté, et comme le roi lui en demandait la raison, 'c'est,' dit-il, 'pour éviter les effets de la colère du cardinal, qui a juré de s'asseoir sur les pans de mon habit.' Le Duc avait eu son mot qui fit rire la cour; mais le cardinal eut la tête de Buckingham. Ce dernier, peu de temps après, fut accusé de haute trahison, et jugé par ses pairs, qui le déclarèrent coupable. Trop fier pour demander sa vie au roi, le Duc se laisse bravement décapiter. Outre qu'il s'était attiré l'inimitié de Wolsey, les droits qu'il pouvait avoir à la couronne, comme descendant d'Edouard III., éveillèrent la susceptibilité jalouse de Henri VIII. Avec lui s'éteignit, dans la maison de Stafford, le titre ducal de Buckingham.

—*A. Esquiros.*

Crestow Castle formerly belonged to Edward Stafford Duke of Buckingham, who drew upon himself, by his haughty and independent temper, the hatred of Cardinal Wolsey. After dinner one day the Duke, kneeling in the usual way, was holding a basin before the King for him to wash his hands. When the King had finished and had moved away, the Cardinal in a playful way dipped his hand into the basin whilst the Duke was still on his knees. The latter took the pleasantry as an insult and, rising at that moment, threw all the water on to the Cardinal's shoes, who, stung to the quick, vowed to the Duke that he would *sit upon the edge of his clothes.* Next day the Duke came to court in a doublet very much shortened, and when the King asked him the reason of this, he said, 'It is to avoid the consequences of the Cardinal's anger, for he has sworn to sit upon the lappets of my coat.' The Duke had had his joke, and it made the court laugh, but the Cardinal had Buckingham's head. The latter was accused shortly afterwards of high treason, and tried by his peers, who declared him guilty. Too proud to beg the King for life, the Duke bravely submitted to execution. Besides the fact that he had drawn upon himself the enmity of Wolsey, the rights which he might have to the crown, as a descendant of Edward III., awoke the jealous susceptibility of Henry VIII. With him expired the ducal title of Buckingham in the house of Stafford.

II. 4. Parse the words in italics of the following sentences:—Le roi *lui en* demandait la raison; *en* figures *vivantes.*

When is the *present participle* becoming a *verbal adjective?* Write in full the imperative of *Se lavât les mains, Ne pas survivre.*

Lui: pronoun, personal, 3rd sing., masc., dative, indirect object of *demandait*.

En: pronoun, personal, 3rd sing., neut., genitive, dependent upon *la raison*.

En: preposition, governing the noun *figures*.

Vivantes: verbal adjective, plural, feminine, agreeing with *figures*.

The present participle becomes a *verbal adjective* when it indicates a *state* rather than an *action*. When it takes an object, is followed by an adjective, or is used in the absolute construction it is a participle and is always invariable; when it is used as an attribute, follows the verb *être*, or is preceded by an adverb, it is a *verbal adjective* and agrees with its noun.

Lave-toi les mains,
Lavons-nous les mains,
Lavez-vous les mains,
Ne survis pas,
Ne survivons pas,
Ne survivez pas.

III.—ENGLISH.

Notes on the June English Language Paper.

Ten questions were to be attempted out of seventeen. In distinguishing the various languages now spoken in the British Isles (No. 1), only English, Welsh, Gaelic, Erse, Manx, need be mentioned. Question 2 is answered in our Seventh English Note for August, 1893, but scope seems to be given for indicating the connection between Modern English and Anglo-Saxon. See below, 2 (*b*). The following *definitions* were asked for—*inflexion, assimilation, etymology, phonetics, accidence, the parts of speech, transitive verb, intransitive verb, impersonal verb, verb of incomplete predication:* some of these are given below. The old question, whether the article is a distinct part of speech, was revived (7), and the uses of *shall* and *will* formed the basis of No. 14 . . . . 2 (*b*) Old English contained three principal dialects, (1) Northumbrian, (2) Mercian, (3) Wessex or Anglo-Saxon. It is from the second of these that modern literary English is mainly derived. (Skeat.) 3 (*a*) Give as large a list as you can of classical words which found their way into our language before the Norman Conquest.

The answer should be arranged chronologically.

(1) Before the Anglo-Saxon Invasion: *camp, mile, wine* (Lat.).

(2) Borrowed from the Britons: *foss, port, street, wall, wick*, and forms of *castra* (Lat.).

(3) From the Introduction of Christianity; *candle, cloister* (Lat.), *apostle, clerk* (Gk.), etc.

5. *Assimilation:* the process by which one alphabetic sound is rendered like, or less unlike, a neighbouring sound.

Phonetics: that division of language-study which deals with articulate sounds.

Accidence: that part of grammar which treats of the accidents or inflexion of words.

8. How would you describe the *number* of the following words?:—*Alms, banns, heronries, optics, poultry, pride, salmon, scissors, sheep, sixpences, thanks, wheat.*

Alms: etymologically *singular*, but in use both singular and plural, *e.g., scorning an alms, alms are scorned.*

Banns: *plural* of a singular (*ban*) no longer in use. In use it is still plural, though the meaning is often singular.

Heronries: *plural* of *heronry*.

Optics: in form a plural, with no singular; in use generally singular, sometimes plural; in meaning singular.

Poultry: in form singuler; in use (1) singular to denote domestic fowls collectively, (2) plural to denote specimens, *e.g., these are fine poultry.*

Pride: as abstract noun, *singular;* as the name of a kind of lamprey, possibly either singular or plural.

Salmon: singular or plural.

Scissors: plural, with no singular.

Sheep: singular or plural.

Sixpences: a double plural. (1) *Sixpence*, containing the collective plural of *penny*, is used as the name of a coin equivalent in value to six pennies; (2) *sixpences* denotes a number of such coins.

Thanks: in form a plural, with no singular in modern speech. In use *thanks* is generally plural (*e.g., many thanks*), but Shakespeare has *much thanks.*

Wheat: singular, with plural *wheats* only in the sense of *different kinds of wheat.*

IV. MATHEMATICS.

The Arithmetic and Algebra Paper.

There were three questions on *theory*—(1) reason of the rule for multiplication of fractions in arithmetic: (2) proof that $ab = ba$, and hence that $a(bc) = c(ab)$, when a and b are any two integers; (3) question 6, viz:—

If R is the remainder when P is divided by Q, prove that the H.C.F. of Q and R is the same as that of P and Q.

If m and n are two integers with no common divisor except unity, then $m^2 + n^2$ and $m^2 - n^2$ can have no common divisor other than 2.

For the first part, see *Hall and Knight*, Sec. 147.

Then, H.C.F. of $m^2 + n^2$ and $m^2 - n^2$ will be H.C.F. of $m^2 - n^2$ and $(m^2 + n^2) - (m^2 - n^2) = 2n^2$.

But the only C.F. of m and n is 1.

$\therefore$ the only C.F. of m^2 and n^2 is 1.

$\therefore$ the only C.F. of $m^2 - n^2$ and n^2 is 1.

$\therefore$ the only possible C.F. of $m^2 - n^2$ and $2n^2$ is 2.

$\therefore$ the only possible C.F. of $m^2 + n^2$ and $m^2 - n^2$ is 2.

8. (iii.) $x^2 + x = y^2 + y$, $ax + by = 1$.

$x^2 + x = y^2 + y$.

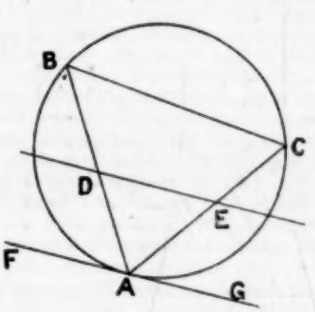
$\therefore x^2 - y^2 = -(x - y)$. $\therefore x - y = 0$ and $x = y$; or, $x + y = -1$, $\therefore x = -(y + 1)$.

Substituting in $ax + by = 1$, we have $x(a + b) = 1$ and $x = y = \frac{1}{a + b}$, or, $y(b - a) = 1 + a$, whence $x = \frac{1 + b}{a - b}$, $y = -\frac{1 + a}{a - b}$.

THE GEOMETRY PAPER.

This was an easy paper of ten questions. The propositions asked for I. 4, I. 21, II. 4, III. 21, IV. 5. Two of the exercises were as follows:—

8. Three points, A, B, C, are taken on a circle, and a line parallel to the tangent at A intersects the lines AB, AC in

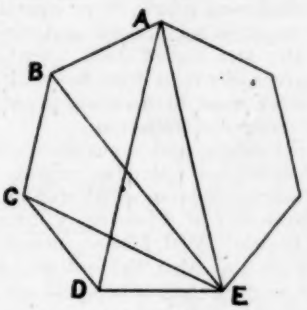


the points, D, E; prove that a circle may be described through the four points B, C, D, E. Let FG be the tangent at A.

Then $\wedge$ GAC = $\wedge$ ABC (III. 32).
And $\wedge$ FAC = $\wedge$ DEC (I. 29).
$\therefore$ the $\wedge$s DBC, DEC are together equal to
$\wedge$s GAC, FAB = 2 rt. $\wedge$s (I. 13).
$\therefore$ a circle can be described about the quadrilater BCED (converse of III. 22, see *Hall and Stevens*, p. 189).

10. In a regular heptagon the extremities of a side DE are joined to the opposite vertex A; prove that, in the triangle ADE, each angle at the base is three times the vertical angle.

10. In a regular heptagon the extremities of a side DE are joined to the opposite vertex A; prove that, in the triangle



ADE, each angle at the base is three times the vertical angle. Because the chords AB, BC, CD are all equal to the chord DE.

$\therefore$ the arcs AB, BC, CD are all equal to the arc DE,
$\therefore$ the $\wedge$s AEB, BEC, CED are all equal to the $\wedge$ DAE,
$\therefore$ the $\wedge$ AED is three times the vertical $\wedge$ DAE. Similarly it may be proved that the $\wedge$ ADE is three times $\wedge$ DAE.

V. MECHANICS.

The June Paper.

There were eight questions with the preliminary caution, *Answer neatly*. We give two answers.

3. Express the work done when a moment M has rotated n times. If a force equal to the weight of 10 lbs. revolve three times tangentially round a circle of 5 feet radius, find the work it would do.

Let the moment M be produced by a force P, acting at a distance a.

Then $M = Pa$, and the distance traversed in one rotation $= 2\pi a$.

$\therefore$ the work done in n rotations
$= P \times 2\pi a \times n = Pa \times 2\pi n = 2\pi nM$.

In the example given the distance traversed $= 2\pi \times 5 \times 3$
$= 30 \times \frac{22}{7} = \frac{660}{7}$ feet, and the force is equal to 10 times the weight of one pound,

$\therefore$ the work done is $\frac{660}{7} \times 10 = \underline{942\frac{6}{7}}$ foot-pounds.

7. Define *density*. A specific gravity bottle, completely full of water, weighs 38·4 grams; and when 22·3 grams of a certain solid have been introduced, it weighs 49·8 grams. Calculate the density of the solid, explaining clearly why the result is density in accordance with your definition, and also why the second weighing differs from the first by less than the weight of the introduced solid.

The density of a substance is its mass per unit volume.

By the introduction of the solid some of the water is displaced; this will be equal in volume to the volume of the solid, and the ratio of the weight of the solid to the weight of this equal volume of water gives the specific gravity of the solid.

Now weight of bottle + weight of all water + weight of solid	= 60·7 gms.
And weight of bottle + weight of some water + weight of solid	= 49·8 gms.
$\therefore$ weight of water displaced	= 10·9 gms.
$\therefore$ specific gravity of solid	$= \frac{22\cdot3}{10\cdot9}$
$\therefore$ density of solid	= 2·05

VI. CHEMISTRY.

The June Paper.

There were six questions; we have answered below the two that seem most useful.

1. Describe any experiments you have witnessed which serve to illustrate the difference between *mixture* and *chemical combination*.

[N.B.—You are desired not to attempt the description of experiments which you have not seen.]

Fine iron filings and roll sulphur well powdered were taken and mixed together. The result was a *mixture*, not a chemical *combination*, for the following reasons:—

(i.) No heat was produced.
(ii.) A powder resulted which exhibited the same physical properties as the constituent parts.
(iii.) With a magnifying glass the particles of sulphur and iron could be distinguished.
(iv.) Particles of iron were readily separated from the sulphur when a magnet was applied.
(v.) When the mixture was shaken up with carbon bi-sulphide, the sulphur was dissolved and the iron left.

The sulphur and iron were then mixed as before and heated in a test tube until chemical action had commenced, when the heat was withdrawn. The result was a *chemical combination* for the following reasons:—

(i.) After the external heat was removed, heat was produced by the combining elements.
(ii.) The result differed in physical properties from the constituent parts, being solid and black.
(iii.) Through a magnifying glass the substance was seen to be uniform.
(iv.) When the mass was broken up, none of it was attracted by a magnet.
(v.) None of it was soluble in carbon bi-sulphide.

4. You are required to neutralise two quantities of 50 grams each of sulphuric acid diluted with water, the one with caustic soda, the other with sodium carbonate; describe how you would do this, and how you would ascertain that neutralisation had been effected. What difference would be noticeable between the two operations, and what quantity of product would be obtained in each case? ($na = 23$.)

Dissolve the caustic soda in about seven times its weight in water, and add slowly to the solution of sulphuric acid, stirring well. Take some blue litmus solution, and by alternate additions of H_2SO_4 and NaHO bring it to a neutral tint. Now take a drop of the sulphuric acid solution which is being neutralised, and add it to the test litmus solution; if this turns red the solution is not neutralised, and caustic soda must be carefully added until the neutral tint of the litmus is unaltered by the additions.

Again, dissolve the sodium carbonate in three or four times its weight of water, and add slowly, as before.

In this case brisk effervescence will take place, owing to the liberation of CO_2.

The equation for the first reaction is

$2NaHO + H_2SO_4 = Na_2SO_4 + 2H_2O$

$2 \times (23 + 1 + 16) + (2 + 32 + 64) = (46 + 32 + 64) + 2(2 + 16)$

$80 + 98 = 142 + 36$, that is, 98 parts of sulphuric acid produce 142 of sodium sulphate and 36 of water.

$\therefore$ the products in the first experiment are $\frac{142}{98} \times 50$ grams of sodium sulphate, and $\frac{36}{98} \times 50$ grams of water $= \underline{72\cdot45}$ grams of Na_2SO_4 and $\underline{18\cdot37}$ of H_2O.

The equation for the second reaction is

$Na_2CO_3 + H_2SO_4 = Na_2SO_4 + H_2O + CO_2$, which shows that the same quantity of sulphate is produced from a given quantity of sulphuric acid as before, that is, 72·45 grams.

VI. HEAT AND LIGHT.

There were six questions; 2 and 5 will probably be most useful.

2. A specific gravity flask, which when empty weighed 5 gr., weighed 150 gr. after it had been filled full of liquid up to a fixed mark when immersed in melting ice. It weighed only 147 gr. after it had been filled up to the same mark when immersed in steam. What is the apparent coefficient of expansion of the liquid? Explain your method of calculation.

Call the cubical content of the flask up to the fixed mark, C.

Then, the weight of a volume C of the liquid at 0° is 145 gr.

And the weight of C of the liquid at 100° is 142 gr.

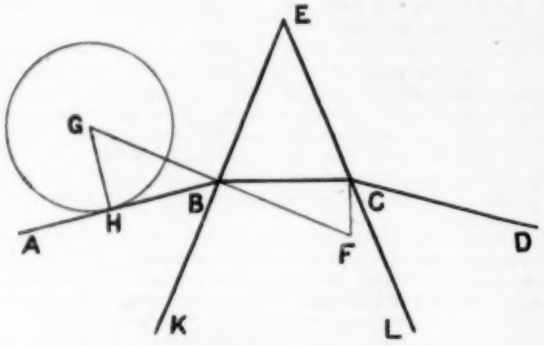
∴ since density is inversely as volume, 142 volumes at 0° would expand to 145 volumes at 100°. Now the co-efficient of expansion is the ratio of *the average increase in volume per degree* to *the original volume* at 0°, and the average increase per degree is $\frac{3}{100}$.

∴ the co-efficient of expansion is $\frac{\cdot 03}{142} = \cdot 000211$

5. Define *refractive index*. Draw, as well as you can to scale, the path of a ray of light passing symmetrically through a prism whose refractive index is 3/2, and whose refracting angle is 45°.

When a ray of light passes through one medium into another, *the refractive index* is the ratio of the sine of the angle of incidence to the sine of the angle of refraction at the common surface of the two mediums. The *refractive index of one medium* is a short expression for the refractive index when a ray of light passes from vacuum into that medium.

Construct as follows:—



Take E an angle of 45° as the angle of the prism; draw BC, making EB = EC to represent the symmetrical path of the ray through the prism.

From C draw CF ⊥ to BC, meeting the normal through B at F.

Produce FB to G, making BG = BF.

With G as centre describe a circle with radius equal to $\frac{2}{3}$ of CF.

From B draw BH to touch the circle.

Draw CD, making ∧ BCD = ∧ ABC.

Then $\frac{\text{Sin. HBG}}{\text{Sin. FBC}} = \frac{\frac{HG}{GB}}{\frac{FC}{BF}} = \frac{HG}{FC} = \frac{3}{2}$

Hence ABCD represents the path of a ray through a prism KEL whose refracted index is 3/2.

WELL-KNOWN TEACHERS AT WORK.

XV.—MR. T. B. ELLERY, F.R.G.S.

Queen Square Boys' School, Luton.

I HAD occasion a few weeks since to search the file of the *Schoolmaster*, and as I scanned the columns of those numbers which have been issued during the past three years, the frequent recurrence of the name which appears at the head of this article led me to look more closely into his 'record.' I found Mr. Ellery's name to be associated with nearly every educational movement which requires solid work and close attention. As I read, the idea forced itself upon me that the school and career of a man who has such a voracious appetite for work must of necessity present characteristic features worthy of imitation.

Always unthinking, and sometimes unkind, critics are prone to comment upon the actions of the men and women who have been constituted by their fellows leaders in the world of Elementary Education. Not seldom one hears—'Well, I have enough to do in my school, and I am sure that the ordinary work of Mr. X . . . . must be neglected, or he could not be devoting so much time and energy to other matters.' One has little need to point out the fallacy underlying this oft-repeated but none the less unveracious statement. The argument briefly stated runs thus—'Because I either can or will not do as Mr. X . . . . does, without neglecting my ordinary work, therefore he cannot.' The logician says that before one can truly arrive at such a deduction it must be proved that the ability and perseverance of 'I' equals that of 'Mr. X . . . .' One more word on this subject or I may be misunderstood. Energy and ability do not always find their outlets in public channels, so that the assumption that only those men and women who are in the forefront of the educational battle possess these qualities would be as far from the truth as the statement referred to above. Experience gained as your interviewer, has taught me that the teachers who have made themselves prominent outside the walls of their schoolrooms are generally amongst those who rank highest as teachers in the estimation of their scholars, colleagues, managers, and of 'the powers that be,' as represented by H.M.I. The self-same spirit which compels them to seek for the honour of being elected to serve on the Executive of the National Union, dominates their actions in the narrower, but not less important, sphere of ordinary life. Trudging along the beaten paths of mechanical routine is only tolerated so long as they are satisfied that new paths to knowledge are not to be discovered by making experimental excursions into unknown educational regions. Never yet have I visited the school of a man who has made himself known in his own professional world, without enlarging my experiences of school work. Very marked, too, is the readiness, nay, the eagerness, with which they impart such information as may be of use to their fellow-workers. No narrow professional jealousy prevents such a man from 'sharing his best.' Feeling sure of a hearty welcome, I left London one afternoon about a month since, and after a thirty miles' run, found myself standing on the platform of the station of the 'straw-plait' town—Luton.

Reaching Queen Square Boys' School was an easy

matter, and I was admitted into a long and well-lighted room, in which Mr. Ellery was teaching. Bluntly stating my errand, namely, that I had come to interview him in the modern American style, Mr. Ellery said—

'You have come at an awkward time; my Government Examination is on. The Inspectors were here yesterday, and are coming again to-morrow, and are even now in another department on this building.'

Of course, apologies followed, and a promise to call later on. Mr. Ellery's reply was characteristic.

'Why should you not stay? The presence of the Inspector need not drive you away. If you do not mind, I do not.'

T. B. Ellery.

Entering some schools at any time within the month preceding the Government Examination would be a risky business, if one were afraid of a snubbing, and I am afraid to say what the consequences would be if your interviewer appeared during the days appointed for the examination. Mr. Ellery thought it 'awkward,' but not for himself, only for me. I had no wish to make a second journey, so I plunged at once into business.

'You have been styled "an expert in figures" and I have heard of your remarkable success in teaching arithmetic and algebra. To what methods do you attribute your success?'

'Continual repetition of tables, endless mental and problem practice, the use of the cyclostyle and the blackboard. Every day each class is well "drilled" for at least ten minutes in tables. I devote an evening in each week to the printing of questions, which are thought out during my frequent journeys to London on executive business. I carry in a special bag the necessary apparatus for examining papers, jotting down notes, not forgetting a carriage lamp, and am thus enabled to while away a tedious hour, and at the same time ease my next day's work. Each set of questions is based first upon weaknesses discovered, secondly, on some new principle which has been recently taught. Sometimes only discovered weaknesses are my basis.'

'Then your algebra,' I said, noticing a remarkably stiff set of Stage I. upon the blackboard; 'are similar methods employed?'

'Yes, here too, "mental" plays a strong part. I am a strong believer in this, and have in anticipation the issue of a book containing a series of questions on this subject, on the same plan as that of my Mental Arithmetic. The principles and thorough knowledge of algebra are only, I am of opinion, to be grasped by immature minds by and through much practice in specific examples, and——'

I interrupted here, for I could see that if Mr. Ellery once started on his favourite hobby, my time would expire before my ends had been attained.

'You teach these lads yourself, Mr. Ellery?'

'Yes, I believe in the personal work of the Head Teacher, where possible, and hence I take a large share in the work of the upper standards. However large my staff I should always take part in the actual daily teaching.'

Noticing the lads were then map-drawing, I asked leave to examine their work. Map-drawing has, I have noticed, during the days (now happily passed away) of payment upon individual results, been relegated to a very minor position. Rarely does one now see such maps as those which we old fogies drew in days of yore.

The '19th century rush' permeates even education, and 'no time' is the cry. Here, however, a pleasant surprise awaited me, and I was wafted back to the days of my boyhood. At least fifty boys were hard at work, and on large sheets of drawing-paper were drawing memory maps of a most elaborate character. The outlines were accurate, the printing was neat, the colouring tasteful, and withal, the rapidity of execution was remarkable. I was especially struck with the colouring, and asked to be let into the secret, for teachers all complain that, as a rule, a child spoils a map by bad colouring.

'Watch this boy,' said Mr. Ellery. I did so, and saw him take a small square of clean blotting-paper and on it rub an ordinary crayon until it was quite covered with the colouring matter. This blotting-paper, thus prepared, he rubbed over the surface which he desired to colour, and the result was an even and effective shade of blue. The rapidity and ease of the operation render it one of the most practical 'dodges' I have met with.

'Who has the credit of this invention, Mr. Ellery?'

'A lad in the school "discovered" it some seven or eight years since, and it has been handed down,' was the reply.

As we passed into another room I said, 'You take much interest in the subject of compulsory drawing. What is your practical experience of the working of the present regulations?'

'I can do the work here with a certain amount of exertion. This is proved by the fact that "excellent" is the "report" year after year; but I am comparatively favourably situated. This is a school under good voluntary management, and I have, if not all, at least nearly all, I require in the way of materials, and am encouraged by the managers to maintain the schools at a high standard of efficiency. My own experience and the information I gained during the recent inquiry which I made on behalf of the Union, lead me to the following conclusion: The present requirements can be met by a school, well staffed and well equipped, but to expect the rural teacher, handicapped with seven standards and sometimes infants as well, to super-add the successful teaching of drawing according to the present regulations to his other work, is simply monstrous. Before the Government imposed the drawing they should have insisted upon the Local Educational Authorities supplying the means to provide material and staff. If these necessaries cannot be supplied by voluntary agency, then other means must be adopted. Although I am a teacher in a Voluntary School, and strongly believe in the existence of the Dual System, I cannot be a party to starving education and sweating teachers, in order that this or any other system may be maintained. But I need hardly tell you that educational starving and sweating are to be found in many a Board School. My contention is that the really good and efficient Voluntary School has proved its right to exist.'

Again I had to interrupt 'Quite right, Mr. Ellery; but we are not at Conference, and there is much else I should like to see this afternoon.'

'Well, boys, how many are on the door to-day?'

'On the door,' thought I, as the hands were raised. Mr. Ellery turned at that moment, and the phrase was explained. A large sliding door was literally covered with specimens of school work of all kinds.

The parents, I was informed, are invited to come at any time, and examine the work 'on the door,' and those who are interested in the progress of their children are often there. Tommy's paper is criticised with a friendly eagerness if there, but if not, Tommy himself is 'criticised' when he reaches home.

A 'Book Club' was one of the features in another room. 'Chums,' 'Pearson's Weekly,' 'Boys' Own Paper,' 'Answers,' and other wholesome literature was set out on a desk ready for distribution. The pupil teacher who manages this will be a valuable assistant master when his turn comes, if he throws the same energy into all his work as he does into this. The papers are provided by the lad's own pence. The loan of the papers is not restricted to the subscribers, the more fortunate possessors of pocket-money being quite willing to share the proceeds with those who are 'down on their luck.'

'Do you do anything beyond examination work, Mr. Ellery?'

'French is usually taught by Mrs. Ellery, who, of course, takes a great interest in the school; but as she is not a professional teacher, we do not always present the lads for examination. Owing to various circumstances, it has had to be discontinued for the last few months; but Mrs. Ellery hopes to be able to resume the work shortly. The lessons are most popular with the boys.'

'As to rewards and punishments; what plans have you? Do you believe in the efficacy of moral suasion?'

'Yes, most certainly; but not as a *dernier ressort*. Certain mental natures are only to be reached through some form of physical suffering. I have, however, in use various forms of moral suasion which I venture to think are worth imitation, and which, it is certain, effect much good.'

Turning to a lad, Mr. Ellery said—

'Kindly bring the Societies' Register.'

The boy quickly returned with a thick and well-bound book, which was handed to me. On the first page I found:—

'PURE WORD SOCIETY.—The members pledge themselves never to use an improper word of any description, and always to avoid the company of those whose language is unfit to be heard.'

'TEMPERANCE SOCIETY.—The members pledge themselves never to taste intoxicating liquors as beverages.'

'KINDNESS TO ANIMALS SOCIETY.—The members pledge themselves to be kind to animals, to birds, to

QUEEN SQUARE BOYS' SCHOOL, LUTON.—TIME TABLE.

St.	9—9.40	9.40—10.0	10	10.0—10.45	10.45—10.55	10.55—11.25	11.25—11.55	11.55—12		2—2.40	2.15	2.40—3.15	3.15—3.25	3.25—4	4—4.30	4.30
5-7	Religious Knowledge	Algebra	Registers Closed	Arithmetic	Recreation *or* Drill	Comp. *or* Dict.	Drawing	Tables	MONDAY	Reading	Registers Closed	English	Recreation *or* Drill	Music	Arithmetic	Dismissal
4		Read. and Spell.		Arithmetic		Dictation	Drawing			Reading		English		Geography	Arithmetic	
3		Spelling		Reading		Arithmetic	Drawing			Reading		Dictation		Geography	Arithmetic	
2		Reading		Dictation		Arithmetic	Drawing			Copy-books		Music		Reading	Geography	
1		Arithmetic		Read. & Spell. (Word-building)		Geography	Drawing			Arithmetic		Music		Reading	Writing *or* Dict.	
5-7	Religious Knowledge	French	Registers Closed	Arithmetic	Recreation *or* Drill	Reading	Drawing	Tables	TUESDAY	Reading	Registers Closed	Music	Recreation *or* Drill	Geography	Algebra	
4		Reading		Arithmetic		Dictation	Drawing			Geography		Arithmetic		Reading	Music	
3		Arithmetic		Reading		Dictation	Drawing			Reading		Dictation		English	Music	
2		Spelling		Arithmetic		Reading	Drawing			Arithmetic		Reading		Dictation	English	
1		Arithmetic		Reading		Writing	Drawing			Arithmetic		Reading		Dictation	Object Lesson	
5-7	Religious Knowledge	Algebra	Registers Closed	Arith. *or* Reading	Recreation *or* Drill	English	Drawing	Tables	WEDNESDAY	Reading	Registers Closed	Composition	Recreation *or* Drill	Geography	Mechanics	
4		Music		Arith. *or* Reading		English	Drawing			Reading		English		Dictation	Arithmetic	
3		Music		Arithmetic		Reading	Drawing			Geography		Reading		Dictation	Arithmetic	
2		English		Reading		Dict. *or* Music	Drawing			Arithmetic		Geography		Reading	Dictation	
1		Arithmetic		Reading		Dict. *or* Music	Drawing			Arithmetic		Reading		Writing	Geography	
5-7	Religious Knowledge	French	Registers Closed	Arithmetic	Recreation *or* Drill	Reading	Drawing	Tables	THURSDAY	Reading	Registers Closed	English	Recreation *or* Drill	Music	Algebra *or* Arith.	
4		Writing		Arith. *or* Music		Reading	Drawing			Reading		English		Geog. or Dict.	Arithmetic	
3		English		Arith. *or* Music		Reading	Drawing			Reading		Writing		Geography	Arithmetic	
2		Arithmetic		Reading		Dictation	Drawing			Arithmetic		Reading		Dictation	Ment. Arithmetic	
1		Arithmetic		Reading		Dictation	Drawing			English		Reading		Arithmetic	Ment. Arithmetic	
5-7	Religious Knowledge	Geography	Registers Closed	Arith. *or* Reading	Recreation *or* Drill	Comp. *or* Dict.	Drawing	Tables	FRIDAY	Reading	Registers Closed.	Writing	Recreation *or* Drill	French *or* Map Dr.	Mechanics	
4		Men. Ar. or Geog.		Arith. *or* Reading		Reading	Drawing			Writing		Reading		Music	Arithmetic	
3		Men. Arithmetic		Reading		Dictation	Drawing			Reading		English		Music	Arithmetic	
2		Geography		Spell. & Dictation		Arithmetic	Drawing			Copy-books		Reading		English	Music	
1		Men. Ar. & Tables		Reading		Dictation	Drawing			Arithmetic		Reading and Word-building		Dictation	Music *or* Geog.	

On Friday morning an examination may be held from 10 to 12 by the Head Master.

Approved on behalf of the Education Department as fulfilling the requirements of Section VII. of the Elementary Education Act, 1870.
October 18th, 1888

(Signed) ERNEST N. WIX, Her Majesty's Inspector of Schools.

each other, and to every person with whom they may have dealings.'

On the following pages were inscribed, under the three headings named, the autographs of the lads who had pledged themselves to keep the respective promises. No lad below the Fourth Standard is permitted to join; Mr. Ellery's reason for this rule being, that young lads ought not to be encouraged to make solemn promises of this nature. The members of the various societies include 'Old Boys,' and these are invited to meet the younger members at least once a year. A red line through one of the names and 'expelled' written opposite led me to inquire the reason. I found that the boy in question had broken his 'pure word' pledge and had been solemnly expelled, but had, later on, obtained re-admission at his own request. A 'flag' for regular attendance and another for the class that stands first in the Head Master's examinations, a system of marks, a large tin always kept supplied with sweets, were also noted by your interviewer during his stay.

'Have you been satisfied with the examination so far, Mr. Ellery?'

'Yes, except that I notice the standard is going up in Arithmetic and Algebra. This does not affect me personally, but I fear others less favourably placed will feel it. Since the cards have been set by the Department, the inequality of the difficulty of the sums has become most marked. Some cards are remarkably easy, while others are just as difficult. However, these vagaries do not affect the report in this division, as the Government Inspector always takes notice of matters of this kind at the request of the teacher. If all Inspectors were as considerate there would be much less dread of the annual visit.'

'Have you real freedom of classification?' I asked.

'Yes, most certainly. The boys are placed in the classes for which, in my opinion, their abilities and health fit them. Her Majesty's Inspector carries out the spirit of the Code to its fullest extent."

Half-past four had arrived and we left the school. As we walked stationwards Mr. Ellery gave me some facts as to his career. He was born in 1855, in Devonshire, and passed his boyhood and pupil teachership among its hills. He was trained at St. Mark's College, and at the close of the usual two years returned to his native county, and was, on the recommendation of Sir Stafford Northcote, appointed master of a village school (Stoke Canon). Two years later he became master of Tillington (mixed) School, and in 1879 he resigned this post, having obtained the head-mastership of the Marlborough St. Peter's Boys' School. While master there he lectured at Marlborough College on book-keeping, and was also assistant coach for the Army Examinations. In January, 1885, he was appointed head master of his present school, and the Government reports, copies of which I was permitted to see, show an unbroken record of highly successful work. "Excellent," without an exception, was the verdict on each occasion after the examinations held under the 'Mundella Code,' and the reports since that time contain nearly all the laudatory adjectives in the English language.

In 1880, Messrs. Chambers commissioned him to write an Arithmetic, which has, since its publication, passed through several editions, and has been adopted by the London School Board.

Since its publication he has always had some writing in hand. Test Cards, Arithmetics, Algebras, Geographical Readers, Stories for Composition, and other smaller compilations give evidence of a prolific pen. It was after the publication of his Geographical Reader (Standard VI., the World), that he was elected a Fellow of the Royal Geographical Society. His work on the Executive of the N.U.T. has rendered his name 'familiar as household words' to a large number of elementary teachers. He was first elected at Portsmouth in 1887 and quickly found his *métier* as Chairman of the Finance, Press, and General Purposes Committee. This post requires ability to deal with masses of detail, and those who have closely followed his work inform me that he is an ideal chairman. There seems to be no end to his appetite for union labour. One week we find him giving evidence as Chairman of the N.U.T. Superannuation Committee before the Select Committee of the House of Commons, another week speaking at a mass meeting of Kent teachers, another, addressing a great gathering of Westmoreland teachers at Kendal, and so on. This year he comes before the Union Electorate as a candidate for the Vice-Presidency. He is supported strongly by many associations, and will, if elected, prove a worthy successor to those gone before.

Last year he organised the Compulsory Drawing Agitation, and as a preliminary investigation, obtained and classified over 1,000 communications anent the subject. This was followed by a deputation to the Education Department, and there is no doubt that the recent relaxations are, in a great measure, owing to the cogent arguments adduced by him.

In local movements, too, Mr. Ellery has his share of work. As President of the local teachers' association and hon. secretary of the orphanage and benevolent funds, he is brought into contact with his professional brethren. As sidesman of the parish church he finds occupation on Sunday. He was, until he began active Union work, on the Working Committee of the political party to which he belongs. Lastly, as an organiser of various entertainments, he is much in request, especially during the Christmas holidays, his 'Yuletide' Shakespearian Tableaux having become locally famous.

As we were standing on the platform ten minutes before the arrival of my train, I said, 'Can you, as Chairman of the Superannuation Committee, give me any information with regard to the superannuation of teachers?' Opening his bag and drawing out a Blue Book and a roll of papers, he said, 'If you want to go into the question I have here the Report of the Select Committee of the House of Commons, and I have also——'

With a pleading gesture I said: 'No, thank you. On another occasion I shall be pleased, but not now.' (I mentally resolved that the 'occasion' should not occur just yet.)

'But I have condensed it,' was the reply of the enthusiast. 'I can give you an outline of the statistics and the scheme in half an hour.' Just then, to my great relief, the train was signalled. Mr. Ellery, noting this, said: 'I am sorry you cannot go into the question now, but please tell your readers that my guiding principle in this matter is—half a loaf is better than no bread, and the acceptance of five or ten shillings in the £ is better than a refusal to accept a fraction because of

the present impossibility of obtaining twenty shillings in the £.'

The train rushed in, and your representative, as he travelled southwards, thought on Mr. Ellery as a prominent example of the truth of the aphorism—'The idle man is always busy, and the busy man has always leisure for other work.'

GOSSIP.

We most sincerely regret our inabilility to present our readers this month with the Prize Cantata. The Judge has awarded the Prize to 'Shirley,' the pseudonym of Mr. J. Edward Parrott, B.A., LL.B, 3, Argyle Road, Anfield, Liverpool, whom we heartily congratulate on his success, and to whom we have had the pleasure of forwarding a cheque for Five Guineas. The Prize Cantata is entitled 'The Jester,' and we are glad to be able to state that it has already been set to music by Dr. Dunstan, the accomplished lecturer on Music at the Westminster and Southlands Training Colleges. All being well, therefore, it will appear in our next issue.

***

Every reader of the Practical Teacher will, we feel sure, regret to hear of Mr. Isaac Pitman's illness, and will, with us, wish him a speedy recovery. As a practical teacher Mr. Pitman has rendered noble service to the cause of education; and we are pleased to find that his sons are treading worthily in their father's footsteps. Since they embarked in the purely educational branch of their business, they have progressed with leaps and bounds. We cordially wish them success, and beg to direct the attention of our friends to their announcement on the second page (wrapper) of our present issue. Evidently these young men mean to make their mark.

Good luck to you, say we.

***

In our next number we shall give the first instalment of a juxtalinear translation of Molière's 'L'Avare,' with critical notes, etc., by Professor Darqué, whose careful translation and scholarly notes of 'La Jeune Sibérienne' have proved such a boon to Scholarship Candidates. The book will be done into English in ample time for the next Certificate Examination, and the whole of it will appear in our pages either in the body of the magazine or as a supplement.

***

Prof. Walker Overend is, by request, hard at work on a series of articles dealing with 'Vital Statistics,' Sanitary Law,' etc. 'Honours' Students in Hygiene should accord these papers a hearty welcome. They are sure to be excellent and quite abreast of the latest scientific research. We are pleased to hear that a new and enlarged edition of Prof. Walker Overend's 'Elementary Human Physiology' is at press, and will be published early in the new year. Miss Warren's admirable needlework papers—undoubtedly the best as yet given to the world—will also be shortly published in book form at half-a-crown, a marvel of cheapness.

Messrs. Joseph Hughes and Co. have nearly ready for publication the late Miss Emily G. Jones's series of Cut-out Patterns and Handbook of Instructions. The whole will be issued at the modest price of two shillings, which should ensure a wide sale for these excellent original patterns.

***

So many inquiries have been made about Mr. Gregory's forthcoming 'Advanced' Physiography that we have lost no time in pushing on this new book. Its appearance is awaited with unusual eagerness. To ensure the work being up to date, from a geological standpoint, we have secured the services of Mr. J. C. Christie, F.G.S., Lecturer on Geology at the Glasgow and West of Scotland Technical College, whose fame as an earnest and enthusiastic scientist is well known.

We cannot, as yet, fix the price at which the book will be published, but to oblige our readers we will upon receipt of P.O.O. for 2s. and the coupon in our current issue, or that of February, undertake to send a specimen copy on the day of publication. So far as we are aware, this is the first time an 'Advanced' Physiography by two men so distinguished as Gregory and Christie could be had **post free for two shillings.** We have every reason to believe that the book will be ready towards the end of January, 1893. For obvious reasons our offer therefore will only hold good during that month. Subsequently, copies must be ordered through the trade.

***

'Advanced' Physiography by Gregory and Christie will be followed in February by 'Honours' Physiography from the same able pens. We accompany our Christmas and New Year's greeting with the promise to send, on the day of publication, this important work also, post free for two shillings. The coupon for either January (present issue) or February must be enclosed with the P.O.O. These offers are, we believe, unprecedented. Each holds good only up to the 31st of January, 1893.

***

The attention of our readers is drawn to the set of chemical apparatus, known as the 'Practical Teacher Set' for the supply of which we have made specially advantageous arrangements. If the price quoted be compared with the list of any manufacturer, the extreme cheapness of the set will be adundantly apparent. In ordering, do not omit to send coupon of current number.

***

Certificate Examination Logic.—Of the four questions set in this branch No. 8 was given in 1890 to First Year Students, No. 9 and part of No. 10 were given to Second Year Students in 1886, and No. 11 was practically given to Second Year Students last year. The answers to all these questions appear in 'Mental Science and Logic for Teachers.'

***

In the December number six questions were given at the end of the article on Spencer's 'Education.' Of the four questions set by the Department, two—viz., those on 'Poetry and Fine Art' and 'Object Lessons,' were practically the same as Nos. 3 and 5 of our

questions. Candidates for 1893 Certificate Examination should note these facts. Here are the questions for comparison :—

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P.T. (5).—Give the substance of Spencer's remarks on Object Lessons.

***

DEPARTMENT (15).—Discuss from the author's point of view, and from any experience of your own, the nature and value of good object lessons.

***

P.T. (3).—What does Spencer say as to the connection between Poetry and Painting and Science? State any objections to his contentions.

***

DEPARTMENT (13).—Comment on this author's observations on poetry and the fine arts, and on their relation to human life and well-being.

***

PROBABLY no two men living are so competent to annotate the new code as Mr. J. H. Yoxall, the General Secretary, and Mr. T. Organ, B.A., the Law Clerk, of the National Union of Teachers. It is with peculiar pleasure, therefore, that we learn these two gentlemen are already hard at work on an edition which, wisely or unwisely, will be issued as a direct Union publication. They ought to turn out an *ideal* Teacher's Code, and we have every confidence they will do so. All success to you, Mr. Secretary and Mr. Law Clerk!

LEGAL AND CODE QUERIES COLUMN.

RULES.

1. All communications must be addressed 'Legal Editor, PRACTICAL TEACHER, 5, Pilgrim Street, Ludgate Hill, E.C.,' and must be accompanied by our 'coupon,' duly filled up.
2. Replies will be given *only* in this column, except under the conditions named in Rule 3.
3. If any reader desire a reply by post, such can be forwarded by enclosing, in addition to the coupon, a stamped addressed envelope and a shilling Postal Order.
4. No original documents should be forwarded, but copies only. We cannot hold ourselves responsible for any losses which occur through non-observance of this rule.

As announced in our last issue, we commence the New Year by offering to our subscribers an additional benefit, which may be tersely stated as 'Legal Advice (6s. 8d.) gratis.'

Large sums are often lost, and much mental anxiety caused, by errors which a very elementary knowledge of law would have prevented. We wish to help our readers to avoid these losses and anxieties, by means, which are at once simple and inexpensive. All communications which reach us, in accordance with the above rules, we shall at once place in the hands of our Legal Editor, 'Jurist,' whom we have specially selected.

Points which arise in connection with teachers' engagements with their employers, and interpretations of difficulties in connection with the Education Acts, will receive his special attention. Neither skill nor trouble will be spared in making the answers as full and accurate as our space and the information submitted will allow. A strict carrying-out of the rules we must insist upon, and any querist who does not receive a reply will be sure that it has arisen through some breach of our conditions.

With these introductory remarks we introduce 'Jurist' to his clients, feeling confident that the professional acquaintanceship will be advantageous to all concerned.—[ED. 'P. T.']

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MISTRESS.—Too delicate a matter to advise upon in this column. Note Rule 3 above; I shall be pleased to deal with the subject on your fulfilling its conditions.

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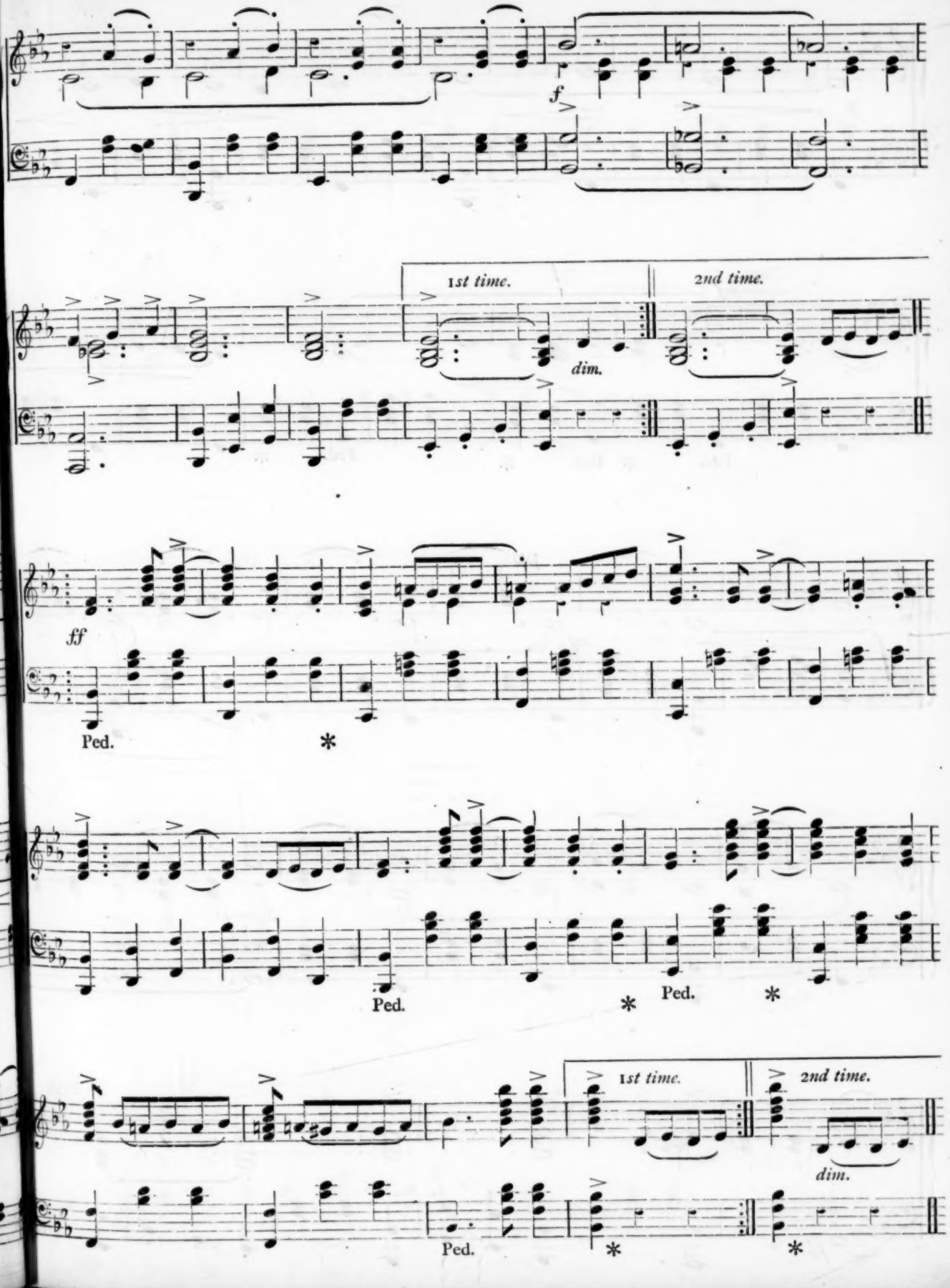
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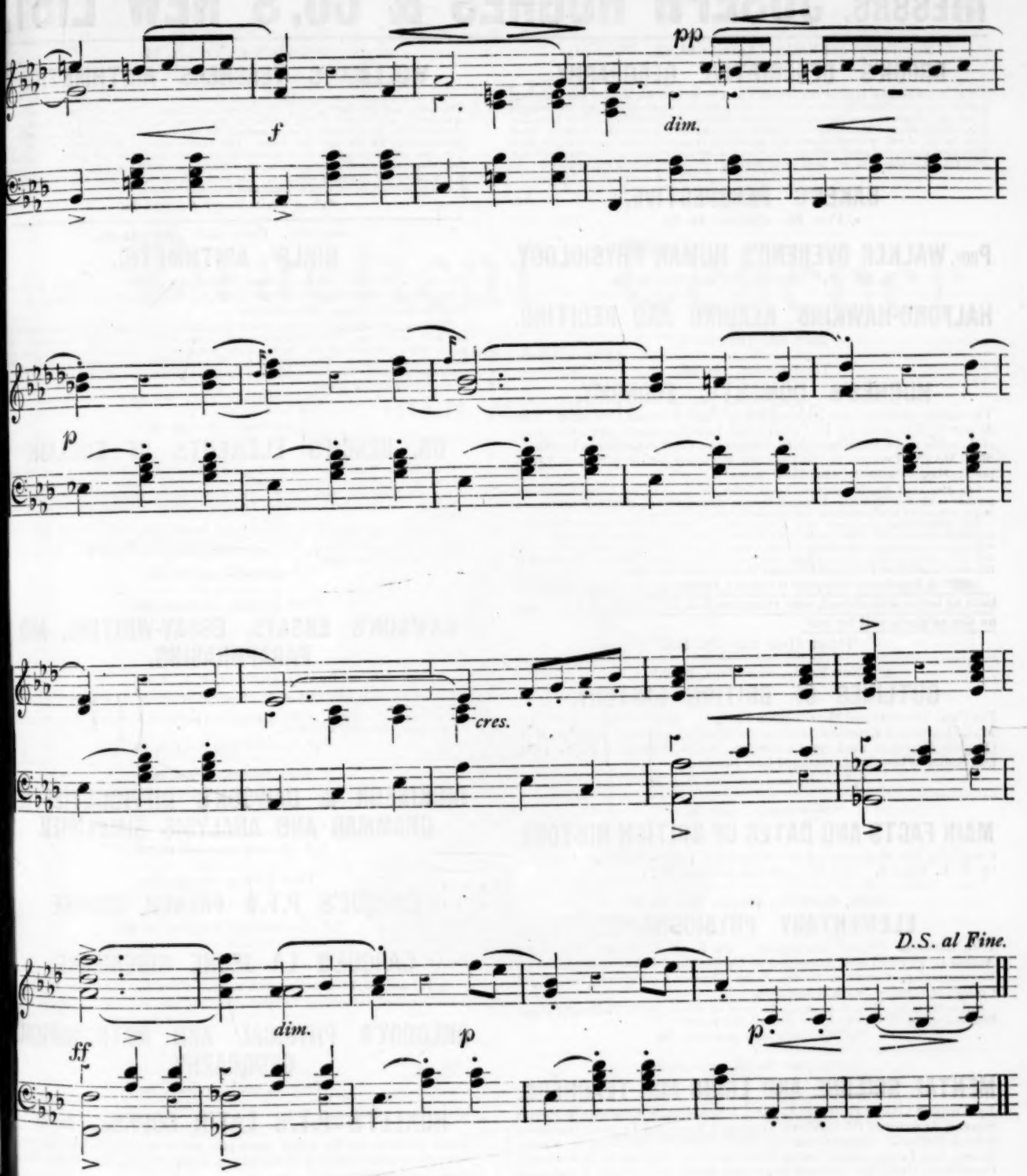
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